2021

Catalogue

wood fiber Fibertherm

Beton Wood®

Index



The wood fiber introduction

Wood, a renewable raw material, is appreciated for the thermal and air-conditioning qualities of the habitat.
Our competence, the result of years of experience and research, together with technological innovations in the field of manufacturing, allow us to maintain all the qualities of the wood in our products.

FiberTherm® wood fiber insulating materials contribute considerably to improving the quality of life, both for the thermal comfort they are able to guarantee, and for their sustainability.
The wood fiber comes from certified forest areas and the assembly takes place without the addition of chemicals.
Our **FiberTherm®** wood fiber products have obtained the **FSC®** ("**Forest Stewardship Council**"®) certification and fully meet the **Minimum Environmental Criteria (CAM)** as they are composed of **91,3%** of their weight of recycled material.
Our wood fiber uses an exceptionally high proportion of renewable raw materials; its production and its installation generate very few harmful substances. In fact, the only raw material used is wood from thinning and untreated sawmill cuts. The material is also guaranteed by constant checks carried out by external bodies, which certify its high quality.

Taking into consideration the life cycle of a building, from design to construction, promoting an approach oriented according to the principles of Eco-sustainability (**Green Building**), our products participate in a percentage share in the supply of the following LEED credits: MR5, MR7, EA1 , IEQ 4.4, IEQ 4.1.

For more information, contact our technical department at info@betonwood.com.

The catalogue briefly describes:

- the ecological qualities and the certifications obtained
- the thermal displacement obtained with **FiberTherm®**
- the technical, physical, chemical and mechanical characteristics of **FiberTherm®** products
- the production process
- intended use in construction of the individual products

Main properties of **FiberTherm®** wood fiber:

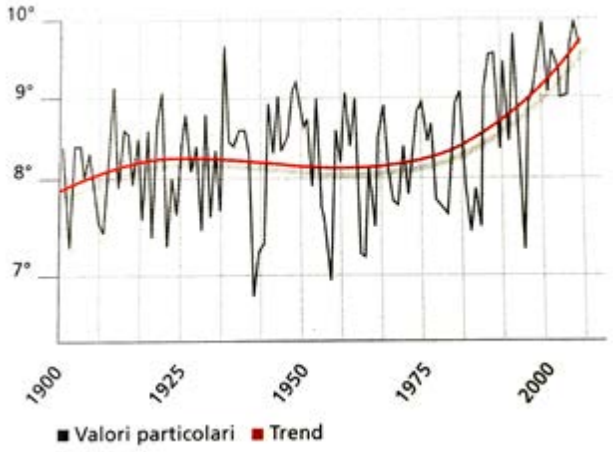
- free from formaldehyde, asbestos and other toxic substances
- free from recycled inks
- dermatologically tested, without any negative effect on the skin
- breathable, it favors a comfortable and healthy environment
- construction material tested and authorized according to the European standards in force
- recyclable, ecological, respects the environment

Thermal displacement

The perfect climate even in extreme temperatures

As pleasant as summer can be, it is difficult to feel comfortable in rooms with tropical temperatures.
FiberTherm® insulating materials ensure, even on days of intense heat, the maintenance of a cool temperature within the walls of the house - without the use of air conditioning systems.

It is known that in the last decades the so-called "tropical" days with temperatures above 30°C have quadrupled. It is no wonder that in the context of new buildings and renovations, protection from the summer heat is becoming increasingly important.
With adequate structures and a certain attention to materials, it is possible to create a pleasant living climate even in the hottest season of the year, in a completely natural way.



FiberTherm® materials, in construction elements such as walls and surfaces of the roof and attic, are able to keep the heat out.
The attics tend to heat up a lot in the summer not only because the thermal insulation is insufficient, but also due to the reduced storage capacity of the layers of the structural element.
Many structures are unable to offer sufficient resistance to the high heat radiation of the summer sun. The heat manages to reach the living quarters.

The solution consists of construction elements with a particularly high thermal mass, such as **FiberTherm®** insulating materials. In the very hot afternoon hours they absorb the heat and "buffer" it until the evening hours. When the accumulated heat is released, it no longer affects the living area, but can be diverted to the outside by ventilating the rooms.

THERMAL DIFFUSION: protection from summer heat

To optimize the insulation, the choice of insulating materials is decisive. The materials that ensure a very slow transmission of heat are indicated, that is, those that have the lowest possible thermal diffusion. They are materials with good thermal insulation and which, with their low thermal conductivity, have a high storage capacity (high specific weight and high specific heat storage capacity). With materials that are heavy and have good insulation capacity, it is possible to reduce and delay heat transfer, for example through the roof. **FiberTherm®** insulating materials have a particularly favorable ratio between conductivity of thermal accumulation and apparent specific weight and therefore low thermal diffusion.

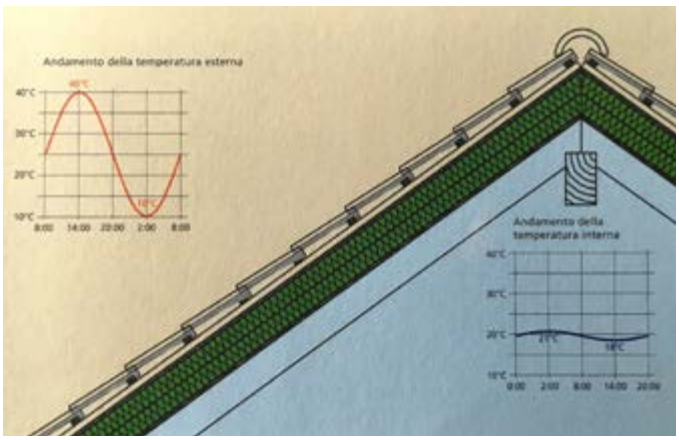
Thermal diffusion

$$a = \frac{\text{Thermal conductivity } \lambda}{\text{Apparent specific weight } \rho \text{ x specific heat capacity c}} \quad \frac{cm^2}{h}$$

Material	Apparent specific weight (kg/m³)	Thermal conductivity [W/(m•K)]	Specific heat J/(kg•K)	Thermal diffusion (cm²/h)
Spruce, pine, fir	600	0,13	2500	3
FiberTherm® universal attic, roof and wall panel	270	0,048	2100	3
FiberTherm® protect for insulating wall system	230 - 265	0,046 - 0,048	2100	3
FiberTherm® multipurpose insulating panels	160	0,038	2100	4
FiberTherm® protect dry for insulating wall system	110 - 140 -180	0,037 - 0,040 - 0,043	2100	3
FiberTherm® flex 60 flexible insulation	60	0,036	2100	15
BetonWood ® cement bonded particle boards	1350	0,26	1880	-
Full brick	1800	0,8	1000	16
Reinforced concrete	2200	1,4	1050	22
Foamed polystyrene	40	0,040	1380	26
Rigid polyurethane foam	30	0,030	1380	26
Fiberglass	30	0,035	800	52
Building steel	7800	58	600	446
Aluminum	2700	200	921	2895

Amplitude attenuation and thermal displacement

The consideration of the U value for thermal protection in winter, for thermal protection from summer heat is represented by the attenuation of the amplitude and the thermal displacement. While the attenuation of the amplitude shows with what intensity it is possible to reduce the heat transfer through the building element, the thermal displacement indicates how many hours the transition to maximum temperatures is delayed.



Roof with amplitude attenuation of 10 and thermal displacement of 12 hours

Amplitude attenuation (1/TAV) defines the ratio of the fluctuation of the outside temperature to the fluctuation of the inside temperature. For example, if the outside temperature fluctuates over the day between 10 and 40 ° C and the inside temperature between 18 and 21°C, the fluctuation of the outside temperature corresponds to 30K (Kelvin) and the fluctuation of the internal temperature to 3 K.
The attenuation of the amplitude as a ratio of these two values in the example corresponds to 10 (= 30K / 3K). Expressed differently: the thermal fluctuation is attenuated by a tenth (10%) in the path from the outside to the inside through the construction element. We aim at an attenuation of the minimum amplitude of 10.

The thermal displacement corresponds to the time period between the taking over of the maximum outside temperature and the taking over of the maximum inside temperature. In the example above this corresponds to 12 hours, extending from 14.00 to 2.00. One of the objectives of protection from the summer heat is to delay the passage of heat through a roof or a wall so that the maximum temperature of the day is reached in the room only when the outside has already cooled down sufficiently to prevent the heating of the room simply with good ventilation.

COMPARING STRUCTURES

Roof with mineral fiber insulation

- U = 0,17 W/m²*K
- 1/TAV = 6
- Thermal displacement = 7 hours

- Roof cover
- Load-bearing battens
- Counter battens
- Roof cover panel
- Mineral fiber 200 mm
- Vapor barrier
- Mineral fiber 40 mm
- Plasterboard 12 mm

Roof with insulating wood fiber panels **FiberTherm® flex**

- U = 0,18 W/m²*K
- 1/TAV = 12
- Thermal displacement = 11 hours

- Roof cover
- Load-bearing battens
- Counter battens
- Roof cover panel
- **FiberTherm® flex** 200 mm
- Vapor barrier
- **FiberTherm® flex** 40 mm
- Plasterboard 12 mm

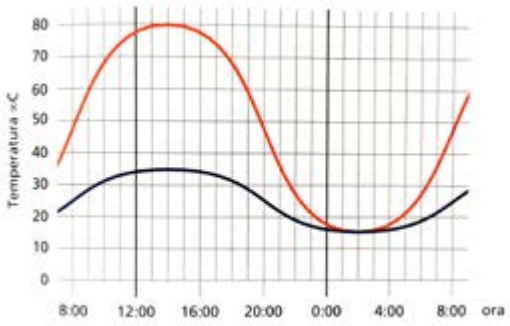
A thermal displacement of at least 10 hours should be aimed at. Part of the heat accumulated in the building element is then diverted again to the outside.
Consequently, the same temperature levels are not generated on the internal front of the building as on the external side. Adjusting the amplitude attenuation and thermal displacement is particularly important with regard to the roof. In the roof, the ratio of the external surface to the cubature is very unfavorable. This is because the attic rooms have a large heat transmission surface compared to the smallness of the airspace.
In summer, high temperatures (up to 80°C) are generated under the roof covering, which in turn intensify the heating of the rooms below. In addition, the roof structures very often have very low thermal masses, so that they are particularly suitable for the use of **FiberTherm®** natural insulating materials.

With the exception of the roof covering and room paneling, the thermal mass of the roof structure is generated exclusively by the insulating material. Therefore, it follows the great importance of defining the attenuation of the amplitude and the thermal displacement with an insulating material that has a low thermal diffusivity. A value of 10 (TAV 10%) must be aimed at for amplitude attenuation and a thermal displacement of at least 10 hours. With an outside temperature of 35°C under the roof

covering, values of up to 80 ° C can occur. Through a good structuring of the building elements it should be ensured that this thermal load affects the climate of the interior rooms in the most dampened and delayed way possible.

If, in the presence of these summer temperature conditions, two roofs with the same thermal transmittance of 0,18 W/(m²*K) are compared, the roof with mineral fiber insulation belongs to the thermal conductivity group 035 with a apparent specific weight of 20 kg/m³, an attenuation of the mathematical amplitude of 6 and a thermal displacement of 6.8 hours. On the side of the roof facing the premises, an increase in temperature is calculated that is far too high for a restful sleep.
At that time, the outside temperature will still be at a similar level; consequently the ventilation will not lead to any sensitive relief. If, while maintaining the same structure, the mineral fiber-based insulating material is replaced with **FiberTherm®flex** flexible wood fiber insulation with the same thermal conductivity of **60 kg/m³**, the heat storage volume of the insulating layer is fivefold, thanks also to the higher specific thermal mass of the insulating material. For the roof itself, the attenuation of the amplitude doubles, passing to 12, while the thermal displacement improves by four hours, passing to 11 hours. Here the temperature curve increases to a maximum of 21°C and reaches the inside of the roof only at 1.00 in the morning.
At this time, the outside temperature is already so low that, if these 21°C were to be disturbing, they could be further reduced by ventilating the premises.

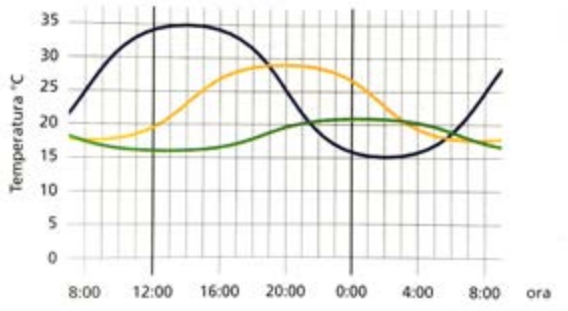
Hypothesis of thermal trend over the day



Temperature under the roof cover
External temperature

With an external temperature trend of 35°C at 2.00 pm and 15°C at 2 am, a maximum temperature of 80°C is generated in the roof covering, which at night can be reduced, in the best of cases, by 15°C.

Temperature trend in correspondence of the roof with different insulation



External temperature
Ambient side temperature of the roof with mineral fiber-based insulation
Ambient temperature on the roof with wood fiber insulation

With FiberTherm® wood fiber-based insulating materials, extreme thermal peaks are prevented, establishing an ideal temperature for the well-being of people both night and day.



Beton Wood®

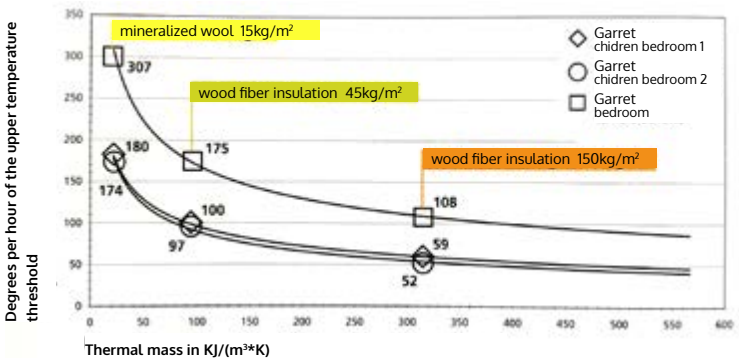
Fiberthерm® works

This is evidenced by its practical use

The fact that this temperature behavior also has direct repercussions on the comfort of the premises is clearly highlighted by the analysis of Prof. Hauser, one of the fathers of the German ordinance on energy saving: on the single-family house analyzed by way of example, by replacing wool with a light wood fiber insulation it is possible to halve the degree-hours of the upper temperature threshold. If using **FiberTherm®** wood fiber panels with an apparent specific weight of 160 kg / m3 compared to insulation with mineral wool, the degree-hours of the upper temperature threshold can be reduced from 1/3 to 1/4.

This "climatic inertia" of **FiberTherm®** insulating materials pays off both in summer and in winter, significantly increasing internal climatic well-being.

The greater the thermal mass of an insulating material, the lower are the "degrees-hours of the upper temperature threshold", ie the time in which we feel discomfort from the heat. **FiberTherm®** wood fiber insulators show excellent performance.



External roof renovation

Ideal renovation if the attic is already habitable and you do not intend to compromise the internal environment.

Once the old roof covering has been removed, the gaps in the beams are insulated with **FiberTherm® flex** flexible insulating material. To maximize the insulating effect, a rigid **FiberTherm® special** panel is also laid directly on the beams. The panel is hydrophobic (water repellent) so that with an intervention it is possible to obtain a triple functionality: non-hydrophilic layer, wind resistance and insulating effect.

Internal roof renovation

Renovation variant where no scaffolding is needed, nor a new existing roof covering.

Once the old internal lining (if present) has been removed, the cavities are insulated with flexible insulating panels **FiberTherm® flex**. To maximize the insulating effect, it is possible to mount additional insulation by means of a transversely applied battens. Double advantage: this layer can be used as an installation plane, eg. for laying the electric cables of light fixtures on the ceiling.

Wall renovation

A lasting renovation of the facade.

The big advantage unlike polystyrene facades: the upper thermal mass actively acts against molds on the facade. The facade cools down slowly at night, so that the humidity in the air cannot settle on the surface.

For wooden or clinker facades, **FiberTherm® universal** or **FiberTherm® special** are offered in combination with a flexible insulating material such as **FiberTherm® flex**.

The wood fiber certified CAM

to obtain the SUPERBONUS 110%

The Relaunch Decree n. 34 of 19 May 2020, as part of the works for the energy redevelopment of existing buildings (superbonus 110), introduced environmental sustainability requirements on insulating materials (for external thermal insulation of the opaque building envelope: walls , attics, roofs). These requirements are indicated in the CAM Minimum Environmental Criteria, introduced for public tenders in the construction field with the Ministerial Decree of 11 October 2017.

Prodotto rispondente ai CAM Criteri Ambientali Minimi BetonWood

The goal of thermal insulation is to reduce the consumption of energy resources necessary for heating and cooling buildings, reducing atmospheric pollution due to the emission of polluting gases resulting from the combustion processes of energy sources of fossil origin. Aware that construction is responsible for 40% of total greenhouse gas emissions into the atmosphere, energy efficiency is the European priority in the fight against climate change. Therefore, even the materials necessary for energy saving must be considered for their environmental impact, energy consumption and social costs, in their entire life cycle.

The EPD importance

The Environmental Product Declaration

The designer must make technical design choices that make it possible to meet the criterion and must prescribe that in the procurement phase the contractor must ensure compliance with the criterion. The percentage of recycled material must be demonstrated through one of the following options:

- a Type III environmental product declaration (EPD), compliant with the UNI EN 15804 standard and the ISO 14025 standard, such as EPDItaly© or equivalent;

- a product certification issued by a conformity assessment body certifying the recycled content through the clarification of the mass balance, such as ReMade in Italy®, Plastic Second Life or equivalent;

- a product certification issued by a conformity assessment body certifying the recycled content through the clarification of the mass balance which consists in the verification of a self-declared environmental declaration, compliant with ISO 14021.

THIRD-PARTY VERIFIED EPD ISO 14025 and EN 15804 Institut Bauen und Umwelt e.V.

FSC®certification

"Forest Stewardship Council"®

The "Forest Stewardship Council"® (FSC®) is an international ONG that has created an internationally recognized forest certification system. The certification has as its purpose the correct forest management and the traceability of derived products.

The brand "Forest Stewardship Council"® (FSC®) indicates that the wood used to manufacture a certified product comes from a forest that is properly managed according to rigorous environmental, social and economic standards. The forest of origin has been independently controlled and assessed in accordance with the principles and criteria for forest management established and approved by the "Forest Stewardship Council"®.

TheFSC® trademarks can be used both on products made from forest-based material and on promotional material. Only certified companies can use FSC® labels on their products. Any company wishing to use FSC® labels on the products it manufactures must therefore first have obtained Chain of Custody (CoC) certification.

FSC®
www.fsc.org
100%
Legno da foreste correttamente gestite
FSC® C127449

PEFC™certification

"Programme for Endorsement of Forest Certification"™

PEFC™
PEFC/18-32-27/23

Certificato PEFC

Questo prodotto è realizzato con materia prima da foreste gestite in maniera sostenibile e da fonti controllate

www.pefc.it

The PEFC™ is an association that constitutes the national governing body of the PEFC™ certification system (Programme for Endorsement of Forest Certification schemes), ie the Evaluation Program of forest certification schemes.

The PEFC™ is an international initiative based on a broad understanding of the parties involved in the implementation of sustainable forest management at national and regional level. Representatives of forest owners and poplar groves, end consumers, users, freelancers, the world of the wood industry and crafts participate in the development of PEFC™. Its objectives include improving the image of silviculture and the forest-wood supply chain, effectively providing a market tool that allows the marketing of wood and forest products deriving from forests and plants managed in a sustainable way.

PEFC™ is your guarantee that the woody raw material for paper and wood products comes from sustainably managed forests. Certified forests are checked by independent inspectors.



Evironmental Product Declaration

according to ISO 14025 and EN 15804

Below is the **Environmental Product Declaration** (or **EPD**) of the **Fibertherm® wood fiber products**.
For information on Environmental Product Declarations of our other products, please click on the following link: Minimum Environmental Criteria or see our website www.woodfiber.it.
Or, you can contact our **technical department** at info@betonwood.com.

1. Product

1.1.Description

This declaration describes a weighted average of production volume of the wood fiber insulating materials **Fibertherm®**, which are produced in both wet and dry processes.
The wood fiber insulation materials specified in the Declaration are used uniformly according to the EN 13171 standard as insulating panels and insulating mats for buildings.

1.2.Applications

The products referred to in point 1.1 are not just fiber panels pressure-resistant wood insulation products produced with the wet process, but also wood fiber insulation mats produced with the dry process. **Fibertherm®** wood fiber insulation is extremely versatile and can be used for wall, roof and floor systems.
They can be used as acoustic insulators against shocks and noise under parquet or laminates, as insulating elements that can be plastered directly for thermal insulation systems, and as flexible insulation for cavities.

1.3.Technical data

The following information refers to the **Fibertherm®** product range.The information on other products specified in the scope of this **EPD** can be viewed on www.woodfiber.it.

Name	Value	Unit
Gross density according to EN 1602	50-265	kg/m³
Moisture of material on delivery according to EN 13171	6	%
Rectangular tensile force according to EN 13171	0.025	N/mm²
Thermal conductivity declared according to EN 13171	0.038	W/(mK)
Water vapor diffusion resistance factor according to EN 13171	5	-
Specific thermal capacity	2100	J/(kgK)
Fire reaction class according to the standard DIN EN 13501-1	E	-
Compression tension at 10% deformation according to DIN 13171	50	kPa

1.4. Placing on the market Rules Application

Directive (EU) No 305/2011 applies to placing the product on the market in the EU / EFTA (with the exception of Switzerland). The insulating **Fibertherm®** wood fiber materials request a **Declaration of performance** (DOP) taking into consideration the harmonized product standards EN 13171: 2012 Thermal insulation materials for buildings - wood fiber (WF) produced in the factory - Specifications and EN 13986: 2015, wood fiber panels for use in construction - Characteristics, conformity assessment and CE marks and marks. The relevant national regulations apply for the use of the products, the General Building Inspection Approval (ABZ) No. Z-23.15-1.452 of the German Institute for Building Technology (DIBt), Berlin apply in Germany for wood fiber insulating materials according to EN 13171.

Additional rules of application

• **DIN 4108-10**:2008-06, Thermal insulation and energy saving in buildings
• **DIN EN 622-4**:2009, wood fiber panels
• **DIN EN 14964**:2006, underlays for discontinuous roofing
• Il **bollettino SIA** 2001-2013, thermal insulating materials
• **ACERMI**:Association pour la certification des matériaux isolants
• **ÖNORM B 6000**: 2010, factory-produced materials for thermal and / or acoustic insulation for building
• **BBA**: British Board of Agrément, technical approvals for buildings

1.5.Delivery status

The following dimensions refer to **Fibertherm®** product.
Thickness: 10 - 200 mm
Lenght xWidth (mm) 1350 x 600
Thickness: 100 - 160 mm
Lenght xWidth (mm) 1880 x 600

1.6. Base materials and accessories

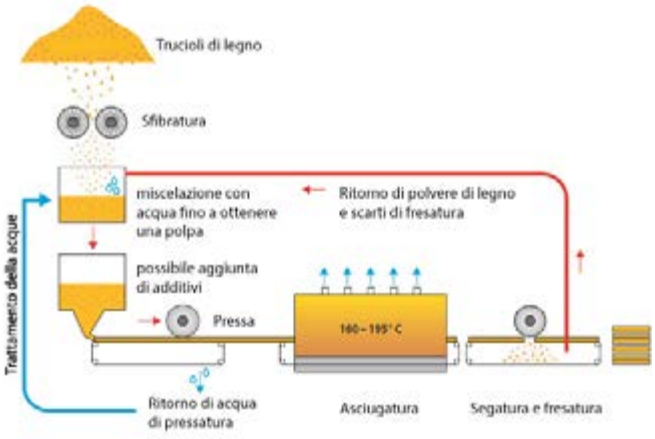
In addition to wood fibers, **Fibertherm®** insulation materials also contain a minimal amount of binders and other additives. The average proportions of the various products for the **Environmental Product Declaration** are:

• wood, coniferous wood in the first place: 91,3 %
• water: approx. 5%
• adhesives: approx. 1,5%
• water repellent: approx. 1,5%
• auxiliary materials: approx. 0,7%

Polyurethane, phenolic resin, sodium silicate and paraffin are used as adhesives and for hydrophobic treatment. The two-component fibers are made of polyethylene and polypropylene. Aluminum sulfate is used as a flame retardant. The bulk density of the declared average wood fiber insulation material is 157.49 kg.

1.7. Production

The **wet production** process of **Fibertherm®** wood fiber insulation panels includes the following steps:



• processing of raw wood to form wood chips
• chip heating under steam pressure
• defibration of wood chips
• mixing of the fibers with water to form a fiber paste (with the addition of specific additives depending on the product)
• formation of the panel by pressing
• longitudinal cutting of the edge
• drying of the panels (160 ° C-200 ° C)
• gluing if necessary (depending on the product)
• cutting and profiling
• storage and packaging

Dry production sequence explanation:
• processing of raw wood
• chip heating with steam pressure
• defibration of wood chips
• drying of the fibers
• addition of two-component fibers
• heating and tracing of the mixture to form an insulating mat
• cutting and profiling
• storage and packaging

All residual products accumulated during production are redirected into the production process or to an internal energy recovery process.



Quality assurance systems:

- quality management system according to ISO 9001
- quality management system according to ISO 14001
- CE marking according to EN 13171
- certificate FSC CU-COC-841217
- certificate PEFC CU-PEFC-841217

1.8. Environment and health during production

Health protection - Due to the manufacturing conditions, no other health protection measures are required apart from the statutory and other regulations.

Environmental protection

Air:the air generated by the waste during the production process is clean in accordance with the legal specifications.
Water/soil: No direct water or soil pollution is caused by the production process. The wastewater generated by production is treated internally and redirected to production.

1.9. Product processing/installation

Depending on the type of panel, **Fibertherm**® wood fiber insulation materials can be treated with standard woodworking tools (hand saw, insulation knife, circular saw, band saw, etc.). If the treatment is carried out without vacuuming the dust, the use of breathing protection is recommended.
Neither the treatment nor the installation of **Fibertherm**® wood fiber insulating materials leads to environmental pollution.
As regards the protection of the environment, no further measures are necessary.

1.10. Packaging

For the packaging of **Fibertherm**® wood fiber insulation materials, polyethylene films, adhesives and wood are used. All packaging materials are recyclable if not mixed, and / or can be recovered as energy.

1.11. Use conditions

The ingredients listed in 1.6 apply for the average product under consideration. The proportions of the ingredients vary according to the range.
During use, about 65 kg of carbon is bound to the product. This corresponds to 239 kg of CO_2 for full oxidation.

1.12. Environment and health during use

Environment - When **Fibertherm**® wood fiber insulation is used correctly, there is no potential danger to water, air, or soil according to the current state of knowledge (Institute of Building Biology) (check in chapter 6).

Health - When **Fibertherm**® wood fiber insulators are installed correctly, they are not a health hazard. It is possible that small quantities of product substances can escape. Furthermore, no emissions relevant to the (Institute for Construction Biology) were detected, (check in chapter 6).
To ensure the exact fulfillment of the legal limit values for emissions, radioactivity, VOC etc., **Fibertherm**® wood fiber insulating materials have been tested externally (Institute for Construction Biology) (check in chapter 6).

1.13. Duration reference

Due to the different possible applications for **Fibertherm**®, wood fiber insulation, no service life has been declared. The durability in conditions of use for **Fibertherm**® wood fiber insulation is defined through the application classes according to DIN EN 13171 and DIN EN 622-4.
The average duration is in the order of that of the building. Influences on aging when applying the rules recognized to the technique.

1.14. Extraordinary effects

Fire: Informations according to the standard EN 13501-1.

Name	Value
Reaction to fire class according to EN13501-1	E

Water: **Fibertherm**® wood fiber insulation materials do not have soluble ingredients that are dangerous for water. Wood fiber insulating materials are not permanently water resis-

tant. Depending on the symptoms of damage, the damaged areas will need to be replaced, partially or entirely.

Mechanical destruction: The product is mechanically resistant (pressure, tensile load) depending on the insulating material used. In the event of damage, irregular breaks occur.

1.15. Re-use phase

When disassembled without damage, **Fibertherm®** wood fiber insulation materials can be reused for the same application, or can be reused in the same application spectrum in an alternative location. Insofar as the wood fiber insulation materials are not contaminated, the raw material can be easily recycled and recovered (e.g. in readmission to the production process).

1.16. Disposal phase

Per kg of wood fiber insulation, **Fibertherm®** wood fiber products can be used as renewable energy sources with a calorific value of approx. 19.3 MJ/kg (u=35%), for example in combustion in waste incineration plants.
Process energy can be generated as well as electricity. European waste catalog (EWC) 030105.

1.17. Additional informations

Detailed informations about **Fibertherm®** product are available on our website www.woodfiber.it.

2. Calculation rules: LCA

2.1.Declared unit

The declared unit is a 1m³ of wood fiber insulating material with an average apparent density equal to 157.49 kg.

Name	Value	Unit
Declared unit	1	m³
Conversion factor to 1kg	0,0042	-
Mass reference	160	kg/m³

The calculation of the average density and the proportions of the substances produced in the declared unit was carried out by calculating the average volume-weight of the products manufactured in the plant.

2.2 System boundary

The declaration type corresponds to an **EPD** "from cradle to gate, with options". It includes the production stage, i.e. from provision of the raw materials through to the works gate of the door factory (cradle to gate, Modules A1 to A3), and parts of the end-of-life stage (Modules C2 to C4). It also contains an analysis of the potentials and debits over and beyond the product's entire life cycle (Module D).
The information module A1 comprises the provision of all semi-finished goods that can be found in the declared unit as material. Transportation of these substances is considered in Module A2.
Module A3 contains all work and expenditures of the manufacture of the product and its packaging from the cradle to the gate, except the aspects already considered in modules A1 and A2. Module C2 describes the transportation as far as the disposal or recycling point, Module C3 the preparation work which makes thermal recycling possible. Furthermore, the CO_2 equivalents of the carbon inherent in the wood in the product, as well as the renewable and non-renewable primary energy sources in the product (PERM and PENRM), are booked as outflows in Module C3, in accordance with EN 16485. The debits and potentials resulting from the end-of-life thermal utilisation of the product and its packaging are analysed in Module D.

2.3 Estimates and assumptions

As a general rule, all of the material and energy flows for the processes required for production are established on site. Nitrogen and carbon monoxide emissions are also established site-specifically. All other emissions were calculated on the basis of published studies - as described in Rüter & Diederichs 2012.

2.4 Cut-off criteria

No known material or energy flows were ignored, not even those below the 1% limit. The total amount of ignored input flows is thus definitely below 5% of the energy and mass applied.

2.5 Period under review

The data were recorded during the year 2019. All production data collected thus refer to a production duration of 12 months.

3. LCA: scenarios and additional technical information

3.1.End of life (C2-C4)

After demolition of the building, it is assumed for waste wood removed from it that it is initially transported across a distance of 20 km to the next user (C2) where it is crushed and sorted (C3). Waste wood is recycled (D) and not disposed of. No expenses are therefore incurred in Module C4.

Name	Value	Unit
Energy recovery	157,4	kg

3.2. Re-use, recovery and recycling potential (D) relevant scenario information

The product is recycled in the form of waste wood in the same composition as the declared unit at the endoflife stage. Thermal recovery in a bio-mass power station with an overall degree of efficiency of 35% and electrical efficiency of 23% is assumed, whereby incineration of 1 tonne wood (atro) (at 18% wood moisture content) generates approx. 1231 kWh electricity and 2313 MJ useful heat. The exported energy substitutes fuels from fossil sources, whereby it is alleged that the thermal energy is generated from natural gas and the substituted electricity complies with the German power mix for 2009.

4. LCA: results

System boundary description

(X=included in the LCA; MND= Module not declared)

Production stage			Construction process		Use stage							End of life stage				Benefits and loads beyond the boundaries
Raw material	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	X	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	MND	X

Environmental impact: 1m³ wood fiber insulation

Parameters	Unit	A1	A2	A3	A5	C2	C3	D
Global warming potential	kg CO_2-Eq.	-3,81E+2	3,86E+0	2,63E+2	2,81E+1	7,16E-1	4,01E+2	-1,77E+2
Depletion potential of the stratospheric ozone layer	kg CFC11-Eq.	6,88E-8	6,42E-16	7,28E-13	1,10E-14	1,19E-16	6,18E-16	-4,47E-12
Acidification potential of land and water	kg SO_2-Eq.	5,95E-2	1,62E-2	6,13E-1	4,81E-3	3,00E-3	1,69E-2	-1,57E-1
Eutrophication potential	kg(PO_4)3-Eq.	1,29E-2	4,07E-3	6,31E-2	9,89E-4	7,54E-4	3,65E-3	-2,67E-2
Formation potential of tropospheric ozone photochemical oxidants	kg ethene-Eq.	9,08E-3	-6,80E-3	8,85E-2	2,42E-4	-1,26E-3	1,65E-3	-1,49E-2
Abiotic depletion potential for non-fossil resources	kg Sb-Eq.	2,78E-5	3,25E-7	2,03E-5	5,97E-7	6,03E-8	1,72E-7	-4,57E-5
Abiotic depletion potential for fossil resources	MJ	4,67E+2	5,33E+1	2,83E+3	8,90E+0	9,88E+0	2,50E+1	-2,58E+3

Resource use: 1m³ wood fiber insulation

Parameters	Unit	A1	A2	A3	A5	C2	C3	D
Renewable primary energy as energy carrier	MJ	5,55E+1	3,00E+0	5,32E+2	1,99E+0	5,56E-1	1,46E+0	-7,85E+2
Renewable primary energy resources as material utilization	MJ	4,20E+3	0.00E+0	2,61E+2	-2,61E+2	0.00E+0	-4,20E+3	0.00E+0
Total use of renewable primary energy resources	MJ	4,26E+3	3,00E+0	7,94E+2	-2,59E+2	5,56E-1	-4,20E+3	-7,85E+2
Non-renewable primary energy as energy carrier	MJ	4,76E+2	5,34E+1	2,87E+3	9,65E+0	9,91E+0	2,51E+1	-2,87E+3
Non-renewable primary energy as material utilization	MJ	3,05E+2	0.00E+0	3,74E+1	-3,74E+1	0.00E+0	-3,05E+2	0.00E+0
Total use of non-renewable primary energy resources	MJ	7,81E+2	5,34E+1	2,91E+3	-2,78E+1	9,91E+0	-2,80E+2	-2,87E+3
Use of secondary material	kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	MJ	0.00E+0	0.00E+0	1,39E+3	0.00E+0	0.00E+0	0.00E+0	4,20E+3
Use of non-renewable secondary fuels	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3,05E+2
Use of net fresh water	m^3	3,80E-1	3,47E-3	1,13E+0	8,98E-2	6,44E-4	1,31E-3	4,28E-1

Output flows and waste categories: 1m³ wood fiber insulation

Parameters	Unit	A1	A2	A3	A5	C2	C3	D
Hazardous waste disposed	kg	8,29E-4	2,49E-6	3,05E-6	3,07E-8	4,61E-7	9,38E-7	-1,49E-6
Non-Hazardous waste disposed	kg	6,31E-1	8,18E-3	3,12E+0	4,88E-1	1,52E-3	4,40E-3	2,96E+0
Radioactive waste disposed	kg	3,53E-3	6,61E-5	1,69E-2	2,97E-4	1,23E-5	2,64E-5	-1,14E-1
Components for re-use	kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2,38E+2	0.00E+0
Exported electrical energy	MJ	0.00E+0	0.00E+0	0.00E+0	4,78E+1	0.00E+0	0.00E+0	6,60E+2
Exported thermal energy	MJ	0.00E+0	0.00E+0	0.00E+0	1,09E+2	0.00E+0	0.00E+0	1,32E+3

5. LCA: interpretation

The LCA results of Modules A1-A3 are interpreted in the following.

After standardisation to overall German emissions, the most relevant environmental impacts of the production of wood fibre insulation materials (Modules A1-A3) are the Global Warming Potential (GWP), the Acidification Potential (AP) as well as the Photochemical Ozone Creation Potential (POCP).

5.1.Global Warming Potential

72% of the global warming-relevant gases can be attributed to the production of the wood fibre insulation materials on site (Module A3). With a share of 27% of total emissions, the provision of the raw materials and preliminary products is also significant (Module A1).
Transportation to the factory location (Module A2) contributes only 1% to the global warming potential. In the factory, the greenhouse gas balance is dominated by the drying of the fibres and of the product (30% of total emissions in Modules A1-A3), the use of resources (16%) as well as electricity requirements for fibre production (8.2%).

5.2.Acidification Potential

82% of the acidification potential (AP) results from the production of the wood fibre insulation materials (Module A3). 17% is caused by the provision of the raw materials and preliminary products (Module A1).
Transportation (Module A2) contributes only 1% to the AP.
With 52% of total emissions in the production phase (Modules A1-3), the drying of the fibres and of the pressed insulation material and with 7% the Environmental Product Declaration **Fibertherm®** wood fibre insulation provision of heat to boil the fibres are the main contributors to the acidification potential.

5.3.Photochemical Ozone Creation Potential (POCP)

Production at the location (Module A1) is responsible for 86% of ozone creation-relevant emissions, 0.3% is caused by transportation (A2), and a further 14% by the production of the raw materials and semi-finished goods (A3). At the factory location, the ozone creation analysis is dominated by the setting of the adhesives and of the additives (52% of total emissions in Modules A1-A3) as well as the provision of heat for the drying processes (22%).

5.4. Abiotic Depletion Potential non-Fossil Resources (ADPE)

The essential contributions to ADPE (57%) are incurred by the provision of additives for the product (Module A1). The consumables used also account for 17% of total ADPE (Module A3).

5.5. Renewable primary energy as energy carrier(PERE)

9% of the use of PERE can be allocated to the provision of raw materials (primarily additives) (Module A1). But most of total use (47%) is attributable to the packaging materials used and the renewable share of electricity consumption accounting for 39% (both Module A3).

5.6. Non-renewable primary energy as energy carrier (PENRE)

The use of PENRE is distributed across the manufacturing process with 42% for heat generation and 38% for electricity consumption there (both Module A3), as well as the provision of product additives accounting for 13% (Module A1).

5.7. Waste

Special waste is incurred almost exclusively (99%) during the provision of additives in Module A1.

Range of results

The results for individual products listed under 2.1 differ from the average results in the Environmental Product Declaration. The following table contains the maximum deviations from the results from Chapter 5 for environmental impacts, energy use and fresh water requirements:



Parameters	Max deviation %
GWP	+35 / -41
ODP	+186 / -99
AP	+21 / -46
EP	+28 / -48
POCP	+30 / -72
ADPE	+112 / -71
ADPF	+42 / -46
PERE	+32 / -38
PENRE	+42 / -46
FW	+26 / -43

6. Tests needed

6.1. Formaldehyde

Fibertherm® wood fibre insulation materials are produced without adhesives containing formaldehyde, whether in the wet process or in the dry process.
Test verification for **Fibertherm®**: Concentration of formaldehyde in accordance with DIN EN 717-1 after 28 days: 0,02 mg/m^3. Created by EPH GmbH, Zellerscher Weg 24, 01217 Dresden, Test Report n°Ha/Br-50, created on 2105/05/21.

6.2. MDI

No binding agents containing isocyanate are used in the production of **Fibertherm®** wood fibre insulation materials made using the wet process, or in the production of **Fibertherm®** flex.

6.3. Testing for pretreatment of substances used

No waste wood is used in the production of **Fibertherm®** wood fibre insulation materials. The wood used is untreated freshly cut wood (coniferous wood).

6.4. VOC

• Test verification for **Fibertherm®** underfloor, Test report n° 32708-002, 22.11.2011, eco-Institut, Sachsenring 69, D-50677 Cologne, D
• Test verification IBR GmbH, Münchener Strasse 18, 83022 Rosenheim, Test report n°3013-632, created on 2014/01/21

AgBB overview of results (28 days)
All of the tested material thus meets the requirements of the AgBB scheme and of the DIBt approval guidelines.

Name	Value	Unit
TVOC (C6-C16)	200	µg/m^3
Amount SVOC (C16-C22)	< 0.005	µg/m^3
R (dimensionless)	0,06	-
VOC without NIK	< 0.005	µg/m^3
Carcinogenic substances	<1	µg/m^3

FiberTherm® flex
Density 50 - 60 kg/m³

pg.**24**

Flexible insulating wood fiber panels for roofs, internal walls, floors, attics.

FiberTherm® universal
Density 270 kg/m³

pg.**48**

High density rigid insulating wood fiber specific for roofs and walls.
Available in **dry** version.

Bitumfiber
Density 280 kg/m³

pg.**64**

Bituminous wood fiber for traditional and raised floors, attics, flat and sloping roofs, external and internal walls.

FiberTherm®special dry
Density 140 kg/m³

pg.**35**

Rigid insulating wood fiber for roofs, interior walls, attics.

FiberTherm® roof dry
Density 140 kg/m³

pg.**37**

Wood fiber for insulation and waterproofing of flat roofs and attics.

Fibertherm®
Density 160 kg/m³

pg.**38**

Multi-purpose stable insulating wood fiber for roofs, interior walls, floors, attics, dry screeds.

FiberTherm® top
Density 140 kg/m³

pg.**32**

Fiber wood is a thermo-acoustic insulator for attics and non-walkable floors.

FiberTherm® zell
Density from 32 to 45 kg/m³

pg.**66**

Insulating wood fiber for cavities in bags for blowing or filling by hand.

FiberTherm® isorel
Density 230 kg/m³

pg.**44**

Fiberboard is a multipurpose insulator for roofs, attics, ceilings, interior walls and floors.

FiberTherm®soundstrip

Density 60 kg/m³

pg.**26**

Wood fiber strip for floors, inter-storey ceilings, and interior walls. Corrects unevenness of screeds and walls.

FiberTherm® floor

Density 160 kg/m³

pg.**41**

Wood fiber thermo-acoustic insulation panel for floors and ceilings. Can also be used in roofs and attics.

FiberTherm® base

Density 250 kg/m³

pg.**46**

Fiber wood insulation and waterproofing of flat roofs and floors. Compressive strength equal to 100 kPa.

FiberTherm® protect

Densities 230 - 265 kg/m³

pg.**55**

Insulating wood fiber for the creation of natural external and internal thermal coats (ETICS). Wet produced.

FiberTherm®protectdry

Densities 110 - 140 - 180 kg/m³

pg.**52**

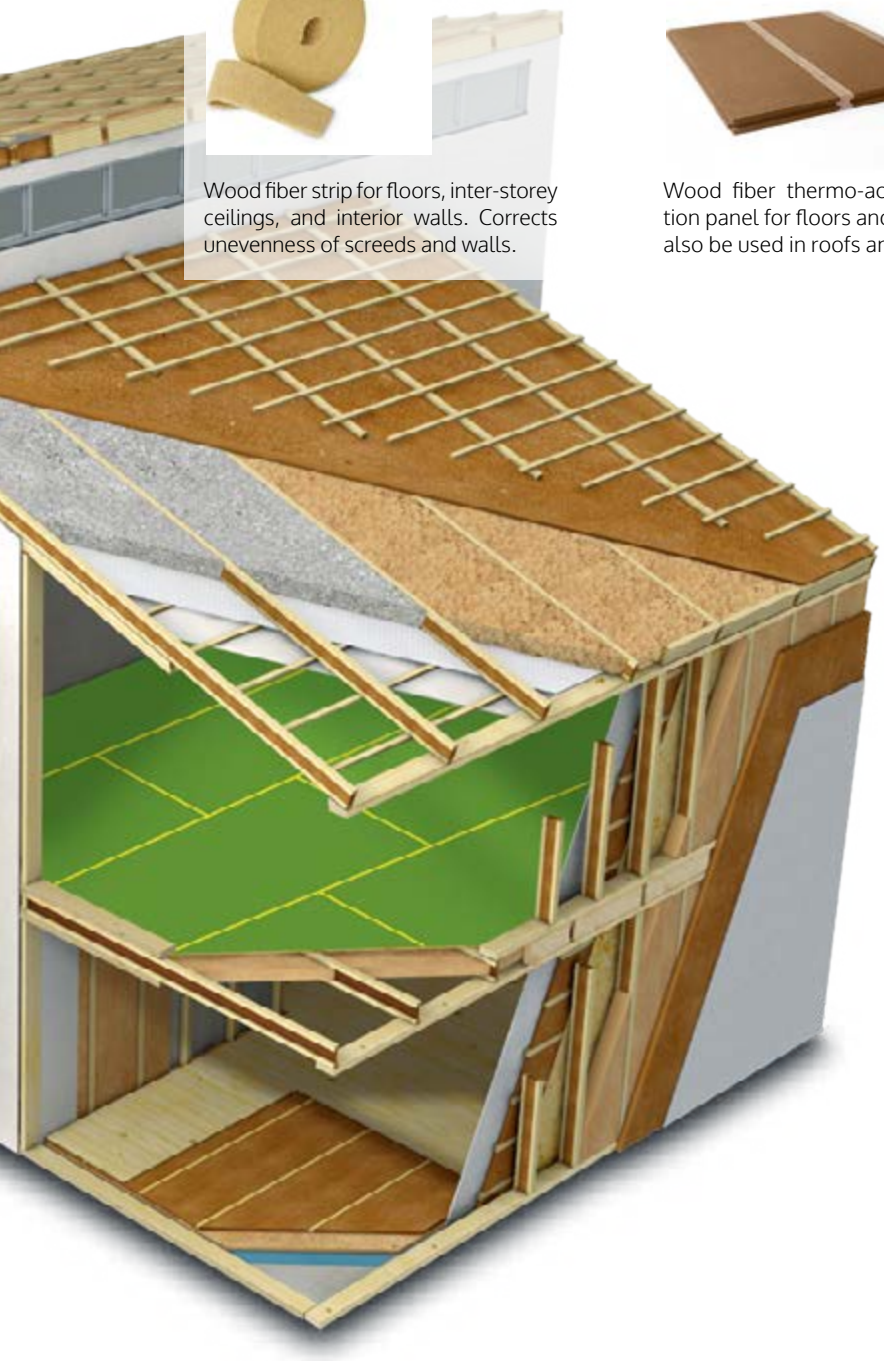
Insulating wood fiber for the creation of natural external and internal thermal coats (ETICS). Dry produced.

FiberTherm®internal

Density 160 kg/m³

pg.**50**

Insulating wood fiber for the creation of natural internal thermal coats (ETICS). Wet produced.



FiberTherm® install

Density 140 kg/m³

pg.**33**

Insulating wood fiber panel for installation levels of systems on walls and ceilings.

FiberTherm® floc

Density from 27 to 60 kg/m³

pg.**67**

Insulating cellulose flakes for cavities in bags for blowing or filling by hand.

FiberTherm®underfloor

Density 250 kg/m³

pg.**47**

Thin insulating wood fiber mat that absorbs up to 19 dB on parquet and laminate floors.

Fibertherm® flex 50

Flexible wood fiber panels produced with dry process

density 50kg/m³

The **Fibertherm® flex** wood fiber panel is a multifunctional flexible compressible thermal and acoustic insulation, it adapts perfectly to the shaping of the elements between which it is installed, corrects thermal bridges and insulates the entire structure. It has thermal and acoustic insulation values, optimal density and breathability designed to allow the creation of isolated environments with high living comfort, where there is a natural regulation of internal humidity.

Ideal for isolating all parts of the building; roofs, attics, inter-storey floors, ceilings, interior walls and floors.
Excellent insulation of cavities in wood and metal frame structures; partitions, counter-walls, installation rooms, load-bearing structures in roofs and floors.

It is guaranteed by constant checks carried out by external entities which certify its high quality and, thanks to its high percentage of recycled material (**90%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- flexible compressible insulating panel, suitable for compression;
- easily adapts to the shapes of the profiles, thanks to its high compression capacity;
- also excellent as sound insulation;
- dermatologically tested, with no adverse effects on the skin;
- made using the dry method;
- remarkable insulating properties;
- breathable, it favors a comfortable and healthy environment;
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ Insulation in partitions, floors and beams;
√ Internal insulation of floors and roofs, insulation between beams, trusses, structural elements;
√ Insulation of structures with curved profiles and surfaces, not rectilinear;
√ Insulation of false ceilings;
√ Insulation between beams or above them (in the case of non-walkable attics);
√ Sound insulation under rigid panels;
√ Insulation of wooden structures (X-Lam);
√ Insulation of metal frame structures;
√ Insulation of internal partitions, partitions.

Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/packaging	packagings/pallet	m²/panels	kg/pallet
40	1200 x 625	2,00	10	12	90,0	approx. 230
60	1200 x 625	3,00	8	10	60,0	approx. 230
80	1200 x 625	4,00	6	10	45,8	approx. 170

Thickness mm	Size mm	kg/m²	panels/packaging	packagings/pallet	m²/panels	kg/pallet
80	1220 x 670	4,00	12	10	49,0	approx. 195
100	1220 x 670	5,00	8	12	39,2	approx. 195
120	1220 x 670	6,00	8	10	32,7	approx. 195
140	1220 x 670	7,00	8	8	26,2	approx. 185
160	1220 x 670	8,00	6	10	24,5	approx. 195
180	1220 x 670	9,00	6	8	19,6	approx. 195
200	1220 x 670	10,00	4	12	19,6	approx. 200

Technical characteristics

Features	Values
Manufacturing controlled according to	IT EN 13171
Identification code	WF - EN 13171 - T3 - TR1 - AF$_r$5 - MU 2
Density kg/m³	50
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	2
Thermal resistance R_D (m²·K)/W	1,05(40)/1,30(50)/1,55(60)/2,10(80)/2,60(100)/3,15(120)/3,65(140)/4,20(160)/4,70(180)/5,25(200)/5,75(220)/6,30(240)
Hydraulic resistance relative to the length [(kPa·s)m²]	≥5
Components	wood fiber, polyolefin fibers, ammonium sulphate
Waste code (EAK)	030105/170201 disposal such as wood and wood-based materials



Fibertherm® flex 60

Flexible wood fiber panels produced with dry process

density 60kg/m³

The **Fibertherm® flex** wood fiber panel is a multifunctional flexible compressible thermal and acoustic insulation, it adapts perfectly to the shaping of the elements between which it is installed, corrects thermal bridges and insulates the entire structure. It has thermal and acoustic insulation values, optimal density and breathability designed to allow the creation of isolated environments with high living comfort, where there is a natural regulation of internal humidity.

Ideal for isolating all parts of the building; roofs, attics, inter-storey floors, ceilings, interior walls and floors.
Excellent insulation of cavities in wood and metal frame structures; partitions, counter-walls, installation rooms, load-bearing structures in roofs and floors.

It is guaranteed by constant checks carried out by external entities which certify its high quality and, thanks to its high percentage of recycled material (i**90%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- flexible compressible insulating panel, suitable for compression;
- easily adapts to the shapes of the profiles, thanks to its high compression capacity;
- also excellent as sound insulation;
- dermatologically tested, with no adverse effects on the skin;
- made using the dry method;
- remarkable insulating properties;
- breathable, it favors a comfortable and healthy environment;
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ Insulation in partitions, floors and beams;
√ Internal insulation of floors and roofs, insulation between beams, trusses, structural elements;
√ Insulation of structures with curved profiles and surfaces, not rectilinear;
√ Insulation of false ceilings;
√ Insulation between beams or above them (in the case of non-walkable attics);
√ Sound insulation under rigid panels;
√ Insulation of wooden structures (X-Lam);
√ Insulation of metal frame structures;
√ Insulation of internal partitions, partitions.

Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/packaging	packagings/pallet	m²/panels	kg/pallet
40	1220 x 575	2,40	10	12	84,2	approx.227
50	1220 x 575	3,00	9	10	63,1	approx.215
60	1220 x 575	3,60	8	10	56,1	approx.227
80	1220 x 575	4,80	6	10	42,1	approx.227
100	1220 x 575	6,00	4	12	33,7	approx.227
120	1220 x 575	7,20	4	10	28,1	approx.227
140	1220 x 575	8,40	4	8	22,4	approx. 214
160	1220 x 575	9,60	3	10	21,0	approx.227
180	1220 x 575	10,80	3	8	16,8	approx. 207
200	1220 x 575	12,00	2	12	16,8	approx.227
220	1220 x 575	13,20	2	10	14,0	approx.210
240	1220 x 575	14,40	2	10	14,0	approx.226

Technical characteristics

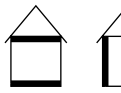
Features	Values
Manufacturing controlled according to	IT EN 13171
Identification code	WF - EN 13171 - T3 - TR1 - AF5
Density kg/m³	60
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,036
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	1÷2
Thermal resistance R_D (m²·K)/W	1,10(40)/1,35(50)/1,65(60)/2,20(80)/2,75(100)/3,30(120) /3,85(140)/4,40(160)/5,00(180)/5,55(200)/6,10(220)/6,65(240)
Hydraulic resistance relative to the length [(kPa·s)m²]	≥5
Components	wood fiber, polyolefin fibers, ammonium sulphate
Waste code (EAK)	030105/170201 disposal such as wood and wood-based materials

Fibertherm® soundstrip

density 60kg/m³

Flexible wood fiber strips — produced with dry process

The **Fibertherm® Soundstrip** wood fiber strip is a thermal and acoustic insulation for floors, intermediate floors, and interior walls.
Corrects the unevenness of the components of the screed or the unevenness of the plasterboard partition walls.
Also excellent in radiant systems and raised floors.



Thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- insulating strip with alternative organic PE;
- excellent sound insulation;
- dermatologically tested, with no adverse effects on the skin;
- made using the dry method;
- adapts to the shapes of the profiles, high compression capacity;
- breathable, it favors a comfortable and healthy environment.

Available sizes

sharp edge's strips

Thickness mm	Width mm	Lenght m	rolls/box	boxes/pallet	kg/pallet
10	100	10	6	24	approx. 150

Technical characteristics

Features	Values
Manufacturing controlled according to	EN 13171
Density kg/m³	60
Reaction to fire according to EN 13501-1	E
Specific heat J/(kg·K)	2100
Thermal resistance R_D (m²·K)/W	0,26
Flexural strength at 10% of compression (kPa)	≥ 8
Components	wood fibers (pine)
Waste code (EAK)	030105/170201

Building uses

√ Insulation for traditional and raised screeds;
√ Corrects thermal bridges in radiant floor heating systems;
√ Insulation of wooden structures (X-Lam);
√ Insulation of metal frame structures;
√ Insulation of partition walls, partitions.



Beton Wood®

Fibertherm® dry

Low density wood fiber panels produced with dry process

density 110kg/m³

Fibertherm® dry wood fiber panel is a multifunctional thermal and acoustic insulation, and is therefore suitable for use in all parts of the building: roofs with smooth and homogeneous surfaces, **insulation for CLT walls**, external wall in masonry or with wooden frame combined with curtain wall, walkways in areas such as non-walkable attics filled with loose insulating material such as **Fibertherm® zell** or **Fibertherm® floc**.
It is particularly stable and light, it is produced with a dry process that does not require the use of adhesives of any kind. This natural panel is available with tongue & groove, rebated, or sharp edge profile. It has a density of 110 kg/m³.

It is guaranteed by constant checks carried out by external entities which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- universal panel for multiple areas of use;
- effective protection against summer heat and winter frost;
- dermatologically tested, with no adverse effects on the skin;
- light and stable insulation, dry product;
- high vapor permeability and climate regulation;
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ External insulation of the roof or floor, protected from atmospheric agents, under-tile insulation on a flat substrate;
√ Planar insulation of solid wood elements;
√ Insulation between the beams, roofing with cavity, top floors not habitable but walkable;
√ Internal insulation of the floor (soffit) and roof;
√ Insulation on the external side of masonry walls and wooden frames in combination with ventilated facades;
√ Internal insulation of the floor;
√ Insulation of metal and wooden frame structures;
√ Insulation of internal partitions, partitions.



Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1350 x 600	4,40	56	45,4	approx. 215
60	1350 x 600	6,60	38	30,8	approx. 218
80	1350 x 600	8,80	28	22,7	approx. 215
100	1350 x 600	11,00	22	17,8	approx. 211
120	1350 x 600	13,20	18	14,6	approx. 207
140	1350 x 600	15,40	16	13,0	approx. 215
160	1350 x 600	17,60	14	11,3	approx. 218
180	1350 x 600	19,80	12	9,7	approx. 215
200	1350 x 600	22,00	12	9,7	approx. 215
220	1350 x 600	24,20	10	8,1	approx. 215
240	1350 x 600	26,40	10	8,1	approx. 215
260	1350 x 600	28,60	8	6,4	approx. 215
280	1350 x 600	30,80	8	6,4	approx. 215
300	1350 x 600	33,00	8	6,4	approx. 215

rabbeted edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
140	1350 x 600	1335 x 585	15,40	16	12,7	approx. 215
160	1350 x 600	1335 x 585	17,60	14	10,9	approx. 215
180	1350 x 600	1335 x 585	19,80	12	9,4	approx. 207
200	1350 x 600	1335 x 585	22,00	12	9,4	approx. 229
220	1350 x 600	1335 x 585	24,20	10	7,8	approx. 211
240	1350 x 600	1335 x 585	26,40	10	7,8	approx. 229

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
60	1880 x 600	1855 x 575	6,60	38	38,4	approx. 283
80	1880 x 600	1855 x 575	8,80	28	31,6	approx. 293
100	1880 x 600	1855 x 575	11,00	22	23,5	approx. 288
120	1880 x 600	1855 x 575	13,20	18	19,2	approx. 283
140	1880 x 600	1855 x 575	15,40	16	17,1	approx. 293
160	1880 x 600	1855 x 575	17,60	14	15,0	approx. 293



Technical characteristics

Features	Values
Manufacturing controlled according to	DIN EN 13171
Identification code	WF-EN13171-T5-CS(10\Y)50-TR10-WS1,0-MU3
Density kg/m^3	110
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,037
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0,12(40)/0,18(60)/0,24(80)/0,3(100)/0,36(120) /0,42(140)/0,48(160)/0,54(180)/0,6(200)/0,66(220) /0,72(240)/0,78(260)/0,84(280)/0,9(300)
Thermal resistance R_D (m^2·K)/W	1,05(40)/1,60(60)/2,15(80)/2,70(100)/3,20(120) /3,75(140)/4,30(160)/4,85 (180)/5,40(200) /5,90(220)/6,45(240)/7,00(260)/7,55(280)/8,10(300)
Compression stress for 10% distortion δ_{10} (N/mm^2)	0,05
Compressive strength (kPa)	50
Perpendicular tensile strength (kPa)	10
Instant water absorption (kg/m^2)	≤ 1,0
Components	Wood fiber, PUR resin, paraffin
Waste code (EAK)	030105



Beton Wood®

Fibertherm®safe

Waterproof wood fiber panels produced with dry process

densities 110 - 140 - 210 kg/m³

Fibertherm® safe wood fiber panel is a thermo-acoustic insulation used as an under-tile panel for roof renovations and new buildings.
It has an integrated laminated membrane to obtain maximum protection from atmospheric agents for new constructions and renovations.
It is used as a cover for flat or pitched roofs to have an excellent, effective and economical insulation.
Wind and moisture resistant.
Its format is optimized to be used also as an insulating wall element for clinker façades.

It is guaranteed by constant checks carried out by external entities which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- underlay panel with roof covering membrane;
- panel used to increase protection against rain;
- male-female profile that offers a hermetic seal even against driving rain;
- open to diffusion for a healthier construction;
- can be combined with **Fibertherm® multi UDB** vapor barrier to create joints such as the ridge of the roof;
- windproof, waterproof, insulating layer;
- significantly reduces structural thermal bridges;
- simple gluing with integrated self-adhesive strips;
- particularly permeable to vapor for high safety in building renovation;
- universal panel for multiple areas of use;
- high vapor permeability and climate regulation.

Building uses

√ External insulation of the roof that protects from atmospheric agents, under-tile insulation;
√ Insulation suitable for roofs with slopes up to 12 °;
√ Ideal insulation for flat pitched roofs >5 °, for example, pitched roofs;
√ External insulation for walls and facades;
√ Wall panel for wooden constructions in combination with rear-ventilated curtain walls;
√ Clinker wall panel for ventilated facades;
√ Insulation of metal and wooden frame structures;
√ Insulation of internal partitions, partitions.




Available sizes

tongue&groove edge's panels - 110kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
120	1880 x 600	1855 x 575	19,2	18	20,30	approx. 285
140	1880 x 600	1855 x 575	15,4	16	18,04	approx. 295
160	1880 x 600	1855 x 575	17,6	14	15,79	approx. 295

tongue&groove edge's panels - 140kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
60	2800 x 600	sharp edges	8,40	19	66,50	approx. 625
60	1880 x 600	1855 x 575	8,40	38	42,86	approx. 405
80	1880 x 600	1855 x 575	11,20	28	31,58	approx. 385
100	1880 x 600	1855 x 575	14,00	22	24,81	approx. 370

tongue&groove edge's panels - 210kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	2500 x 600	2475 x 575	8,40	56	84,00	approx. 710
40	2800 x 600	sharp edges	7,20	28	98,00	approx. 795

Technical characteristics

Features	Values
Identification code 110 kg/m³ 140 kg/m³ 210 kg/m³	WF-EN 13171-T5-CS(10\Y)50-TR10-WS1,0 WF-EN 13171-T5-CS(10\Y)100-TR10-WS1,0 WF-EN 13171-T5-CS(10\Y)50-TR10-WS1,0
Density kg/m³	110 - 140 - 210
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,037(110) - 0,040(140) - 0,045(210)
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	7
s_d value (m)	0,28(40)/0,42(60)/0,56(80)/0,70(100)/0,84(120)/0,98(140)/ 1,12(160)
Thermal resistance R_D (m²·K)/W	0,28(40)/ 1,50(60)/2,00(80)/2,50(100)/3,20 (120)/3,75 (140)/ 4,30(160)
Compressive strength (kPa)	50 (110)/ 100(140)/ 200(210)
Resistance to water penetration	W1
Waterproofing (mm)	≥ 4.000
Exposition time	up to 8 weeks

Fibertherm®top

density 140kg/m³

Low density wood fiber panels

produced with dry process

Fibertherm® top wood fiber panel is a thermal and acoustic insulation for attics and floors that cannot be walked on; it is used in the renovation of ceilings and attics to increase insulation, thermal displacement, breathability and, consequently, to ensure the elimination of moisture and the presence of mold. It is suitable for transporting in ceilings or small and difficult to reach environments. To increase the effectiveness of the insulation, it can be used together with **Fibertherm® flex** and/or **Fibertherm®**.

Thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/ pallet	m²/panels	kg/pallet
80	1200 x400	11,20	28	13,44	approx.150
100	1200 x400	14,00	22	10,56	approx.150

Technical characteristics

Features	Values
Identification code	WF-EN13171-T5-CS(10\ Y)100-TR10-MU3
Density kg/m³	140
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,041
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0,24 (80)/ 0,30 (100)
Thermal resistance R_D (m²·K)/W	1,90 (80)/ 2,60 (100)
Compression stress for 10% of distortion δ_{10} (N/mm²)	0,07
Compressive strength (kPa)	70
Perpendicular tensile strength (kPa)	≤ 10
Hydraulic resistance relative to the length (kPa·s)/m²	≤ 100

Advantages

- high resistance of the surface thanks to its special finish;
- highly breathable, it protects without the use of vapor barriers;
- light and stable, quick and easy installation;
- particular properties of vapor permeability and climate regulation.

Building uses

√ Thermal-acoustic insulation of the attic or uninhabitable attics, which cannot be walked on;

√ Insulation of the floor (soffit);

√ Insulation of structures with frames, wooden boards or metal frames.



Fibertherm®install

Wood fiber panels for installations — produced with dry process

density 140 kg/m³

Fibertherm® install wood fiber panel is an internal insulation suitable for use on the entire surface of the installation layer in the wall. It is also used to ensure internal insulation of perimeter and partition walls, both in renovations and in new buildings.

Thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- insulating panel in wood fiber with milled laying channels oriented vertically and accessible from the floor and ceiling;
- high compressive strength > 100 kPa;
- its structure makes it ideal for prefabrication systems;
- the internal cladding (eg plasterboard or cement bonded particle board) can be easily fixed to the substructure through the insulating panels;
- excellent combination with **BetonWood®** **cement bonded particle boards**;
- facilitate accessibility for on-site installation of the systems;
- particularly permeable to vapor for high safety in building renovation;

Available sizes

smooth surface's panels

Thickness mm	Size mm	panels/ pallet	m²/pallet	kg/m²	kg/pallet
50	2600 x 600	44	68,6	7,00	approx.490

large format panels with milling

Thickness mm	Size mm	panels/ pallet	m²/pallet	kg/m²	kg/pallet
50	1250 x 2595	22	71,4	5,60	approx.410
60	2650 x 1250	19	62,9	8,40	approx.529

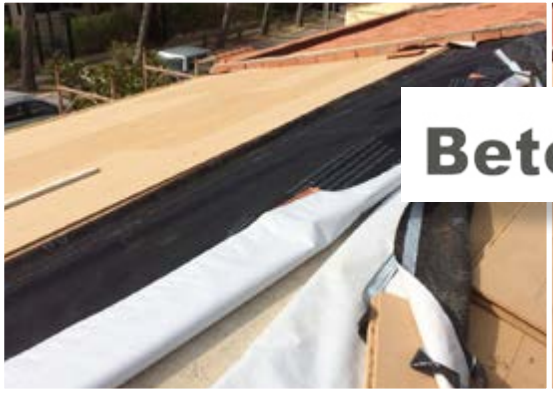
Building uses

√ Thermal and acoustic insulation of the internal wall in traditional construction systems and in prefabrication systems;
√ Panel designed to house the electrical systems thanks to the milling present on its internal surface;
√ Insulating panel for installation levels;
√ Thermal and acoustic insulation ideal for ceilings and attics;
√ Insulation of metal and wooden frame structures;
√ Insulation of internal walls and partitions.




Technical characteristics

Features	Values
Manufacturing controlled according to	EN-14964-IL
Identification code	WF-EN 13171-T5-CS(10/Y)100-TR10-MU3
Density kg/m^3	140
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,040
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0,15 (50), 0,18 (60)
Thermal resistance R_D (m^2·K)/W	1,25 (50), 1,50 (60)
Compressive strength (kPa)	≥ 100
Perpendicular tensile strength (kPa)	10
Hydraulic resistance relative to the length [(kPa*s) / m^2]	≥ 100
Components	Wood fiber, PUR resin, paraffin
Waste code (EAK)	030105 /170201


Fibertherm® special dry

density 140 kg/m³

Under-tile wood fiber panel produced with dry process

FiberTherm® special dry is an insulating panel in wood fiber for new or repaired roofs, for the renovation of buildings of all kinds. The panels are made of natural wood fibers and are produced without additives through a dry process. The bond between fibers does not occur thanks to lignin and not to added adhesives.
It is a thermal and acoustic insulation used as an under-tile panel for the renovation of roofs and new buildings.
It is used as an under-tile layer to have an excellent, effective and economical insulation.
Thanks to its profile, it guarantees wind resistance, suitability and water drainage, without further joints for roofs with inclinations of at least 16°. It reduces the thermal bridges of the building, protects from hail, protects from summer heat and guarantees excellent acoustic insulation.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- rehabilitation panel for thermo-acoustic insulation above the beams;
- the special male-female profile contributes to the hermetic closure of the construction without the need for adhesive tapes or glues;
- windproof, waterproof, insulating layer;
- made using the dry method;
- significantly reduces structural thermal bridges;
- protects from summer heat and provides good acoustic insulation;
- can be laid directly on the beams without planking;
- handy format, particularly easy processing;
- particularly permeable to vapor for high safety in building renovation;
- UDP-A type under-tile panel for roofs with a slope of ≥ 16°.

Building uses

√ External insulation of the roof or floor, protected from atmospheric agents, under-tile insulation;
√ External insulation of the roof or floor under the waterproofing;
√ Internal insulation of the floor (soffit) or roof;
√ Internal insulation of the floor or foundation slab (upper side) under the screed without soundproofing requirement;
√ External insulation of the wall behind the cladding;
√ Insulation of metal and wooden frame structures;
√ Insulation of internal walls, partitions.

Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40*	1880 x 600	1855 x 575	5,60	56	59,7	approx. 420
60	1880 x 600	1855 x 575	8,40	38	40,5	approx. 399
80	1880 x 600	1855 x 575	11,20	28	29,9	approx. 382
100	1880 x 600	1855 x 575	14,00	22	23,5	approx. 370
120	1880 x 600	1855 x 575	16,80	18	19,2	approx. 360
140	1880 x 600	1855 x 575	19,60	16	17,1	approx. 370
160	1880 x 600	1855 x 575	22,40	14	14,9	approx. 370
180	1880 x 600	1855 x 575	25,20	12	12,8	approx. 360
200	1880 x 600	1855 x 575	28,00	12	12,8	approx. 390

* for wall applications only

Technical characteristics

Features	Values
Manufacturing controlled according to	DIN EN 13171
Identification code	WF-EN 13171-T5-CS(10/Y)100-TR10-WS1,0-MU3
Density kg/m³	140
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,040
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0,12(40)/0,18(60)/0,24(80)/0,30(100)/0,36(120)/ 0,42(140) / 0,48(160)/0,54(180)/0,60(200)
Thermal resistance R_D (m²·K)/W	1(40)/1,5(60)/2(80)/2,5(100)/3(120)/3,5(140) /4(160)/4,5(180)/5(200)
Flexural strength at 10% of compression δ_{10} (N/mm²)	0,10
Compressive strength (kPa)	≥ 100
Tear resistance (kPa)	≥ 10
Hydraulic resistance relative to the length [(kPa*s) / m²]	≥ 100
Components	wood fiber, PUR resin, paraffin
Waste code (EAK)	030105



Fibertherm®roof dry

density 140 kg/m³

Wood fiber panel for roofs and attics produced with dry process

The **Fibertherm® roof dry**, wood fiber panel, dry produced, has optimal thermal-acoustic insulation and compressive strength values that make it ideal in flat or sloping roof systems, attics and floors (excellent if used in combination with **cement bonded particle board BetonWood®**).
Thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's panels

Thick. mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
60	800 x 800	8,40	38	24,3	approx. 237
80	800 x 800	11,20	28	17,9	approx. 228
100	800 x 800	14,00	22	14,1	approx. 216
120	800 x 800	16,80	18	11,5	approx. 209
140	800 x 800	19,60	16	10,2	approx. 214
160	800 x 800	22,40	14	9,0	approx. 213
180	800 x 800	25,20	12	7,7	approx. 204
200	800 x 800	28,00	12	7,7	approx. 225

Technical characteristics

Features	Values
Density kg/m³	140
Reaction to fire according to EN 13501-1	E
Coeff. of thermal conductivity λ_D W/(m·K)	0,040
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,18(60)/0,24(80)/0,3(100)/0,36(120)/ 0,42(140)/0,48(160)/0,54(180)/0,6(200)
Thermal resistance R_D (m²·K)/W	1,5(60)/2,0(80)/2,5(100)/3,0(120)/3,5 (140)/4,0(160)/4,5(180)/5,0(200)
Compression stress for 10% of distortion (N/mm²)	0,1
Compressive strength (kPa)	100
Tensile strenght (kPa)	≥10
Hydraulic resistance rel. to length (kPa·s)m²	≥100

Advantages

- high compressive strength;
- particularly suitable for the insulation of flat roofs;
- high protection from summer heat and winter cold;
- continuous hydrophobicity.

Building uses

√ External insulation of flat and pitched roofs protected from atmospheric agents;
√ Insulation of the attic;
√ Internal insulation for the sub-base or the floor (upper side) without the need for additional acoustic protection;
√ Insulation of metal and wooden frame structures;
√ Insulation of internal walls, partitions.



Fibertherm®

Multi-purpose wood fiber panel produced with wet process

density 160kg/m³

Fibertherm® wood fiber is a rigid panel that has optimal thermal and acoustic insulation values, density, breathability and compressive strength to be used in all parts of the building: roofs, attics, inter-storey floors, ceilings, internal walls and floors. It guarantees the creation of environments with high living comfort as well as a truly healthy indoor atmosphere.

Excellent insulation of cavities in wood and metal frame structures; partitions, counter-walls, installation rooms, load-bearing structures in roofs and floors.

It can also be used for the insulation of external walls in combination with **Beton-Wood ® cement bonded particle boards.**

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- high compressive strength;
- effective protection against summer heat and winter frost;
- dermatologically tested, with no adverse effects on the skin;
- made using the wet method;
- remarkable insulating properties;
- open to the diffusion of water vapor;
- high capacity to absorb ambient humidity, which constitutes a natural hygrometric regulator system;
- creates a healthy and completely natural internal atmosphere;
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ External insulation of roofs and floors with coverings laid discontinuously or under sealed cladding;
√ Internal insulation for floors and roofs, insulation between beams, trusses;
√ Ceiling insulation;
√ Insulation between beams or above them (in the case of non-walkable attics);
√ Sound insulation under rigid panels;
√ External insulation for walls as long as it remains covered with BetonWood cement bonded particle board or rainproof coating;
√ Insulation of wooden structures (X-Lam);
√ Insulation of metal frame structures;
√ Insulation of internal walls, partitions.



Available sizes

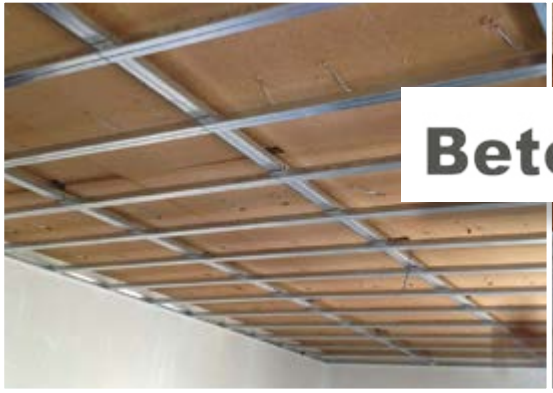
sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
20*	1350 x 600	3,20	116	94,0	approx. 300
30*	1350 x 600	4,80	74	59,9	approx. 300
40	1350 x 600	6,40	56	45,4	approx. 300
60	1350 x 600	9,60	38	30,8	approx. 300
80	1350 x 600	12,80	28	22,7	approx. 310
100	1350 x 600	16,00	22	17,8	approx. 300
120	1350 x 600	19,20	18	14,5	approx. 300
140	1350 x 600	22,40	16	12,9	approx. 300
160	1350 x 600	25,60	14	11,3	approx. 300
180	1350 x 600	28,80	12	9,7	approx. 310
200	1350 x 600	32,00	12	9,7	approx. 325

* thicknesses belonging to the **Fibertherm SD** product, a wood fiber product with the same technical characteristics and composition of the Fibertherm product. The only difference is that **Fibertherm SD** has thinner thicknesses.

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
100	1880 x 600	1850 x 570	16,00	22	24,8	approx. 420
120	1880 x 600	1850 x 570	19,20	18	20,3	approx. 420
140	1880 x 600	1850 x 570	22,40	16	18,0	approx. 420
160	1880 x 600	1850 x 570	25,60	14	15,8	approx. 420


Beton Wood®

Technical characteristics

Features	Values
Manufacturing controlled according to	UNI EN 13171
Identification code	WF-EN 13171-T4-CS(10 \Y)50-TR 2,5-WS 2,0-AF_r100
Density kg/m^3	160
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,1(20) /0,2(30) /0,2(40)/0,3(60) /0,4(80) /0,5(100) /0,6(120) / 0,7(140) /0,8(160)/ 1,0(200)
Thermal resistance R_D (m^2·K)/W	0,5(20) /0,5(30)/1,05(40)/1,5(60) /2,10(80) /2,6(100)/3,15(120) /3,65(140) /4,20(160)/4,70(180)/5,25(200)
Tensile strength perpendicular to the panel (kPa)	2,5
Hydraulic resistance relative to the length [(kPa·s)m^2]	≥100
Flexural strength at 10% of compression σ_{10} (N/mm^2)	0,05
Compressive strength (kPa)	50
Components	wood fiber, binder between layers
Waste code (EAK)	030105/170201



Fibertherm® floor

Wood fiber panels for floors

produced with wet process

density 140 kg/m³

Fibertherm® floor wood fiber panel is a thermal and acoustic insulation for floors and ceilings; it has excellent compressive strength and greatly reduces environmental noise thanks to its noise abatement properties.
Soundproof wooden strips are installed for the passage of the floor boards.
It can also be used for the insulation of roofs and attics.
Thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

tongue&groove edge's panels

Thick.mm	Size mm	Real surface mm	kg/m²	panels / pallet	m² / panels	kg/ pallet
40	1200 x 380	1186 x 366	6,40	84	38,3	ap. 260
60	1200 x 380	1186 x 366	9,60	57	26,0	ap. 260

joists between panels

Thick. mm	width mm	lenght mm	pc./pallet	kg/piece	piece/m²
35	50	2000	45	ap. 2	1,3
35	50	2000	31	ap. 3	1,3

Technical characteristics

Features	Values
Density kg/m³	160
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,2 (40) / 0,3 (60)
Thermal resistance R_D (m²·K)/W	1,05 (40) /1,55 (60)
Flexural strength at 10% of compression σ_{10} (N/mm²)	0,05
Hydraulic resistance relative to the length [(kPa·s)m²]	≥100
Tensile strength perpendicular to the faces (kPa)	≥ 2,5
Compressive strength (kPa)	50

Advantages

- high compressive strength;
- effective protection against summer heat and winter frost;
- dermatologically tested;
- excellent impact sound insulation;
- high absorption capacity with an improvement in environmental noise.

Building uses

√ Insulation of the ceiling of the upper floor accessible and habitable;
√ Internal insulation of attic and roof;
√ Internal wall insulation;
√ Internal insulation of the attic or attic under the cladding;
√ Thermal-acoustic insulation of wooden structures (X-Lam).

Fibertherm® universal dry

Multi-purpose wood fiber panel produced with dry process

densities 180 - 210 kg/m³

The **FiberTherm® universal dry 180 and 210** wood fiber panel is a thermo-acoustic insulation fixed under the finishing layer of roofs and walls. It has the ability to increase the insulating power of wooden elements.

This panel is used as an under-tile layer for roof renovations and in new buildings. The wood fiber insulating panel is used as internal thermal and acoustic insulation of perimeter and partition walls, both in renovations and in new buildings, to contribute considerably to improving the quality of life within the walls of the house.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- medium density panel for balanced protection from the cold in winter and protection from heat in summer;
- high safety thanks to the special male-female profile which contributes to the hermetic closure of the construction without the need to use adhesive tape or glues;
- windproof, waterproof, insulating layer;
- significantly reduces structural thermal bridges;
- protects from summer heat and provides good acoustic insulation;
- handy format, particularly easy processing;
- particularly permeable to vapor for high safety in building renovation;
- UDP-A type under-tile panel for roofs with inclination ≥ 16 °;
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ Lower insulation for roof slopes ≥ 16 °
√ Wall insulation for timber constructions in combination with ventilated facades
√ External insulation of the roof or ceiling, protected from atmospheric agents, insulation under the covers;
√ Internal insulation of the roof and ceiling (soffit);
√ Internal insulation of the floor;
√ External insulation of the wall behind the cladding;
√ Insulation of structures with frames, wooden boards, X-Lam systems;
√ Insulation of internal walls, partitions.

Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
35	2500 x 600	2475 x 575	7,35	66	99,0	approx. 715
40	2500 x 600	2475 x 575	8,40	56	81,2	approx. 710

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
52	1880 x 600	1855 x 575	9,36	44	49,6	approx. 450
60	1880 x 600	1855 x 575	10,80	38	42,9	approx. 460
80	1880 x 600	1855 x 575	14,40	28	31,6	approx. 440
100	1880 x 600	1855 x 575	18,00	22	24,8	approx. 433

Technical characteristics

Features	Values
Manufacturing controlled according to	DIN EN 13171 and DIN EN 14964
Identification code	WF - EN 13171 - T5 - DS(70/-)2 - CS(10\Y)180 - TR25 - WS1,0 - MU3
Density kg/m³	approx. 210 (35, 40 mm) / approx.180 (52-100 mm)
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,045 (35, 40 mm) / 0,043 (52-100 mm)
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0,11(35)/0,12(40)/0,16(52)/0,18(60)/0,24(80)/0,30(100)
Thermal resistance R_D (m²·K)/W	0,75(35)/0,85 (40)/1,20(52)/1,35(60)/1,85(80)/2,3(100)
Flexural strength at 10% of compression δ_{10} (N/mm²)	0,18
Compressive strength (kPa)	180
Tensile strength perpendicular to the panel (kPa)	≥ 25
Hydraulic resistance relative to the length (kPa*s)/m²	≥ 100
Components	wood fiber, PUR resin, paraffin
Waste code (EAK)	030105 /170201



Fibertherm® isorel

Multi-purpose wood fiber panel — produced with wet process

density 230kg/m³

The **Fibertherm® isorel** wood fiber panel is a multifunctional thermal and acoustic insulation, and is therefore suitable for use in all parts of the building; roofs, attics, inter-storey floors, ceilings, interior walls and floors.
It can also be used for the insulation of external walls in combination with **Beton-Wood ® cement bonded particle boards.**
Thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's panels

Thick. mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
8	1200 x 1000	2,00	138	165,6	ap. 350
10	2500 x 1200	2,20	114	342,0	ap. 790
12	2500 x 1200	2,64	95	285,0	ap. 790
15	2500 x 1200	3,30	76	228,0	ap. 790
19	2500 x 1200	4,18	60	180,0	ap. 790

Technical characteristics

Features	Values
Manufacturing controlled according to	UNI EN 13986
Identification code	EN 622-4 SB - E1
Density kg/m³	230
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,050
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,04(8)/0,05(10)/ 0,06(12)/0,08(15)/0,1(19)
Thermal resistance R_D (m²·K)/W	0,16(8)/0,2(10)/0,24(12) /0,30(15)/0,38(19)
Flexural strength at 10% of compression (N/mm²)	≥ 0,10
Compressive strength (kPa)	≥100

Advantages

- high compressive strength;
- high protection against summer heat and winter frost;
- optimal combination for dry and wet screed constructions (also for poured asphalt).

Building uses

√ External insulation with sealed cladding;
√ Internal insulation for floors, ceilings, and roofs, insulation between beams;
√ Insulation of non-walkable attics;
√ External insulation for walls if used with BetonWood cement bonded particle board;
√ Insulation of metal and wooden frames;
√ Insulation of internal walls, partitions.




Fibertherm® isorel closlieu

density 230kg/m³

Thin wood fiber panel — produced with wet process

Fibertherm® isorel closlieu wood fiber panel is a multifunctional thermal and acoustic insulation, and is therefore suitable for use in interior walls, partitions and ceilings.
It has a reduced thickness, only 1cm.
This material is suitable for making Closlieu, that is specific spaces suitable for overcoming prejudices and inhibitions, to stimulate and protect the emergence of the formulation through painting.

Thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's panels

Thick. mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
10	2500 x 1200	2,20	114	342,0	ap. 790

Technical characteristics

Features	Values
Manufacturing controlled according to	UNI EN 13986
Identification code	EN 622-4 SB - E1
Density kg/m³	230
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,050
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,05
Thermal resistance R_D (m²·K)/W	0,20
Flexural strength at 10% of compression (N/mm²)	≥ 0,10
Compressive strength (kPa)	≥100
Components	wood fiber, paraffin
Waste code (EAK)	030105/170201

Advantages

- thin thickness;
- high compression strenght;
- dermatologically tested, with no adverse effects on the skin;
- ideal support for painting;
- suitable for fixing all types of paper;
- high thermal insulation against heat in summer;
- excellent insulation properties;
- easy to install.

Building uses

√ Internal insulation of perimeter and internal walls, partitions;
√ Ceilings insulation;
√ Wood structure (X-Lam) insulation;
√ Insulation of metal and wooden frames;

Fibertherm® base

High compression strenght's wood fiber panel produced with wet process

density 250kg/m³

The **Fibertherm® base** wood fiber panel is an ideal thermal and acoustic insulation for the construction of dry and wet screeds, flat and pitched roofs, and walkable floors thanks to its high compressive strength (150 kPa), its density equal to 250 kg/m³, and its impact sound insulation properties.
Can also be used in combination with **BetonWood cement bonded particle boards** in ventilated roof's solutions and, generally, walkable.
Thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's panels

Thick. mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
20	1350 x 600	5,00	112	90,7	ap. 460
40	1350 x 600	10,00	56	45,4	ap. 460
60	1350 x 600	15,00	38	30,8	ap. 470
80	1350 x 600	20,00	28	22,7	ap. 460
100	1350 x 600	25,00	22	17,8	ap. 460

Technical characteristics

Features	Values
Identification code	WF-EN 13171-T5-DS(70,-)2-CS (10\Y)150-TR10-MU5
Density kg/m³	250
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,048
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,1(20)/0,2(40)/0,3(60) /0,4(80)/0,5(100)
Thermal resistance R_D (m²·K)/W	0,40(20)/0,80(40)/1,25(60) /1,65(80)/2,05(100)
Compression stress for 10% of distortion (N/mm²)	≥ 0,15
Compressive strength (kPa)	≥ 150
Tensile strength perpendicular to the panel (kPa)	≥10

Advantages

- high compressive strength;
- continuous hydrophobicity;
- optimal combination for dry and wet screed constructions (also for poured asphalt).

Building uses

√ External insulation of flat and pitched roofs as long as they are protected;
√ External insulation of roof, floor, attic, ceiling or false ceiling;
√ Internal insulation of the perimeter and partition wall;
√ Internal thermal insulation for false ceiling or floor (upper side), under the screed;
√ Insulation of metal and wooden frames.

Fibertherm® underfloor

density 250kg/m³

Thin wood fiber mat — produced with wet process

The **Fibertherm® underfloor** thin wood fiber mat is an excellent impact sound insulation that absorbs up to 19 dB on parquet and laminate floors. Suitable for use in dry screeds and in solutions for floors and ceilings where there is a need for greater acoustic insulation. Ideal for traditional and raised floors.
High compressive strength equal to 100 kPa.
Can also be used in combination with **BetonWood cement bonded particle boards**.
Thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

sharp edge's mats

Thick. mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
3	790 x 590	0,77	20	9,3	ap. 265
4	790 x 590	1,02	15	7,0	ap. 265
5	790 x 590	1,28	15	7,0	ap. 265
7	790 x 590	1,75	15	7,0	ap. 265

Technical characteristics

Features	Values
Manufacturing controlled according to	UNI EN 622-4
Identification code	EN 622-4 SB-E1
Density kg/m³	approx. 250
Reaction to fire according to EN 13501-1	E_{fl}
Coefficient of thermal conductivity λ_D W/(m·K)	0,070
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
Components	wood fiber, paraffin
Waste code (EAK)	030105 /170201

Advantages

- impact sound insulation, improves environmental acoustics;
- pressure resistance up to 20 t/m²;
- long lasting over time;
- open to dissemination;
- resistant to chemical solvents;
- leveling of irregularities up to 3 mm.

Building uses

√ Acoustic insulation in traditional, raised and radiant floor systems;
√ Impact sound insulation for laminate and parquet floors;
√ Insulation of wooden structures (X-Lam);
√ Insulation of metal frame structures.

Fibertherm® universal

density 270 kg/m³

High density wood fiber panel produced with wet process

FiberTherm® universal is a thermo-acoustic insulation in wood fiber panels, particularly stable and light, fixed under the surface finishing layer of roofs and walls. Significantly increases the insulating power of wooden elements thanks to its breathable power and its remarkable density **270 kg/m³**.

It is a thermal and acoustic insulation used as a rigid panel for pitched roofs with a slope of ≥ 16°.
The panel can also be used as a wall insulation for wooden constructions in combination with ventilated facades.
With this wood fiber thermal insulation panel, internal insulation of perimeter and partition walls is ensured, both in the context of renovations and in new buildings.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- high compressive strength;
- high safety thanks to the special male-female profile which contributes to the hermetic closure of the construction without the need to use adhesive tape or glues;
- windproof, waterproof, insulating layer;
- significantly reduces structural thermal bridges;
- protects from summer heat and provides good acoustic insulation;
- particularly permeable to vapor for high safety in building renovation;
- UDP-A type under-tile panel for roofs with inclination ≥ 16 °.
- recyclable, ecological, respects the environment;
- construction material tested and authorized according to the European standards in force.

Building uses

√ External insulation of roofs protected from bad weather, under coating or waterproofing;
√ Insulation between beams, in double-layer roofs (not walkable);
√ Internal insulation of the ceiling or roof (soffit);
√ Internal insulation of the ceiling or floor (under the screed);
√ External insulation of the wall behind the cladding or behind a waterproofing sheath;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.




Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
22	2500 x 600	2480 x 580	5,83	104	156,00	approx. 1020
24	2500 x 600	2480 x 580	6,36	98	147,00	approx. 1020
35	2500 x 600	2475 x 575	9,28	66	99,00	approx. 1010
52	2500 x 600	2475 x 575	13,78	44	66,00	approx. 1000
60	2500 x 600	2475 x 575	16,20	38	57,00	approx. 1000
35	2800 x 1250	2775 x 1225	9,28	33	115,500	approx. 1130

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
35	2800 x 600	9,28	33	115,500	approx. 1130

Technical characteristics

Features	Values
Manufacturing controlled according to	EN-14964-IL
Identification code	WF-EN 13171-T5-DS(70,-)2-CS(10 \Y)200-TR30-WS1,0-AFr100
Density kg/m³	270
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,048
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,11(22)/0,12(24)/0,18(35)/0,26(52)/0,30(60)
Thermal resistance R_D (m²·K)/W	0,45(22)/0,50(24)/0,70(35)/1,05(52)/1,25(60)
Flexural strength at 10% of compression δ_{10} (N/mm²)	0,20
Compressive strength (kPa)	200
Tensile strength perpendicular to the panel (kPa)	≥ 30
Short-term water absorption [(kg/m²]	≤ 1,0
Components	wood fiber, paraffin
Waste code (EAK)	030105 /170201



Fibertherm® internal

density 160 kg/m³

Wood fiber panels for internal ETICS produced with wet process

The **Fibertherm® internal** wood fiber panel is a plasterable panel for thermal insulation insulation of internal walls and partitions. The panels have reduced thicknesses to take up as little space as possible, high compressive strength and are water repellent.

The ecological insulating panel for internal thermal coats **Fibertherm® internal** saves energy and improves the internal environmental comfort.
The practical insulating panels in wood fiber are open to the diffusion of steam and allow the capillary transport of moisture. In this way, **Fibertherm® internal** also actively protects against the formation of mold in inhabited areas because the buffering of humidity and its active transport create a balance that does not allow mold to grow and proliferate.

It can also be used for the insulation of external walls in combination with **Beton-Wood ® cement bonded particle boards.**

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- reduced thicknesses to take up as little space as possible;
- effective protection against summer heat and winter frost;
- dermatologically tested, with no adverse effects on the skin;
- made using the wet method;
- considerable thermal and acoustic insulation;
- open to the diffusion of water vapor;
- high capacity to absorb ambient humidity, which constitutes a natural hygrometric regulator system;
- can be used without additional anti-vapor layers;
- creates a healthy and completely natural internal atmosphere;
- recyclable, ecological, respects the environment.

Building uses

√ Internal thermal perimetral wall insulation system;
√ Active breathable internal insulation in combination with lime and clay plaster;
√ Internal thermal wall insulation system;
√ Ceiling insulation;
√ Insulation for external walls as long as it remains covered with BetonWood cement bonded particle board or rainproof coating;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.

Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1200 x 380	3,20	116	94,0	approx. 300
60	1200 x 380	4,80	74	59,9	approx. 300
80	1200 x 380	6,40	56	45,4	approx. 310

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1200 x 380	1186 x 366	16,00	22	24,8	approx. 420
60	1200 x 380	1186 x 366	19,20	18	20,3	approx. 420

Technical characteristics

Features	Values
Manufacturing controlled according to	UNI EN 13171
Identification code	WF - EN 13171 - T4 - CS(10 \ Y)50 - TR2,5 - AF_r100
Density kg/m³	160
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0,2 (40) / 0,3 (60) / 0,4 (80)
Thermal resistance R_D (m²·K)/W	1,05 (40) /1,55 (60) / 2,10 (80)
Compressive strength (kPa)	50
Components	wood fiber, paraffin
Waste code (EAK)	030105/170201



Fibertherm® protect dry

densities 110 - 140 - 180 kg/m³

Wood fiber panels for ETICS

produced with dry process

The **Fibertherm® protect dry** wood fiber panel is a directly plasterable panel for thermal insulation insulation of internal and external partition and perimeter walls. It has medium density, low thermal conductivity, high compressive strength and is water repellent.

Fibertherm® protect dry is permeable, e.g. steamed, and allows the regulation of humidity. Facade insulation protects the house like a good functional coat. The wall remains breathable and at the same time minimizes the loss of thermal energy in a sustainable way.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- plasterable insulating wood fiber panel;
- robust and long-lasting insulating panels in natural wood fiber;
- permeable and breathable but at the same time water repellent;
- significantly reduces structural thermal bridges;
- protects from heat and cold, and provides good sound insulation;
- protects the climate in a sustainable way thanks to the absorption of CO_2;
- almost unlimited design options thanks to different plastering systems;
- high safety thanks to the special male-female profile which contributes to the hermetic closure of the construction;
- light, particularly easy processing;
- recyclable, ecological, respects the environment.

Building uses

√ External thermal wall insulation system;
√ Internal thermal wall insulation system;
√ Insulation for walls in wood, masonry, stone;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.

Available sizes

sharp edge's panels - 110kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
140	600 x 400	15,40	32	7,7	approx. 129
160	600 x 400	17,60	28	6,7	approx. 128
180	600 x 400	19,80	24	5,8	approx. 125
200	600 x 400	22,00	24	5,8	approx. 138

Available sizes

sharp edge's panels - 110kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
100	1200 x 400	11,00	22	10,60	approx. 127
120	1200 x 400	13,20	18	8,6	approx. 124
140	1200 x 400	15,40	16	7,7	approx. 129
160	1200 x 400	17,60	14	6,7	approx. 128
180	1200 x 400	19,80	12	5,8	approx. 125
200	1200 x 400	22,00	12	5,8	approx. 138
220	1200 x 400	24,20	10	4,8	approx. 126
240	1200 x 400	26,40	10	4,8	approx. 137

tongue&groove edge's panels - 140kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
60	1325 x 600	1300 x 575	8,40	38	30,21	approx. 281
80	1325 x 600	1300 x 575	11,20	28	22,26	approx. 270
100	1325 x 600	1300 x 575	14,00	22	17,49	approx. 261
120	1325 x 600	1300 x 575	16,80	18	14,31	approx. 260
140	1325 x 600	1300 x 575	19,60	16	12,72	approx. 269
160	1325 x 600	1300 x 575	22,40	14	11,13	approx. 269
180	1325 x 600	1300 x 575	25,20	12	9,54	approx. 260
200	1325 x 600	1300 x 575	28,00	12	9,54	approx. 278

sharp edge's panels - 140kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
60	2800 x 1250	11,00	19	66,50	approx. 568
80	2800 x 1250	11,00	14	49,00	approx. 593
100	2800 x 1250	11,00	11	38,50	approx. 575
120	2800 x 1250	13,20	9	31,50	approx. 426
140	2800 x 1250	15,40	8	28,00	approx. 430
160	2800 x 1250	17,60	7	24,50	approx. 430

tongue&groove edge's panels - 180kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1325 x 600	1300 x 575	7,20	56	44,52	approx. 320
60	1325 x 600	1300 x 575	10,80	38	30,21	approx. 326



Available sizes

sharp edge's panels - 180kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	2800 x 1250	7,20	28	98,00	approx. 705
60	2800 x 1250	10,80	19	66,50	approx. 718

Technical characteristics

Features		Values
Manufacturing controlled according to		EN-13171
Identification code	110 kg/m³ 140 kg/m³ 180 kg/m³	WF-EN 13171-T5-DS(70 \90)3-CS(10 \Y)50 -TR 10 - WS1,0 - MU3 WF-EN 13171-T5-DS(70 \90)3-CS(10\Y)100 - TR 20 - WS1,0 - MU3 WF-EN 13171-T5-DS(70 \90)3-CS(10\Y)200 - TR 30 - WS1,0 - MU3
Reaction to fire according to EN 13501-1		E
Density kg/m³		110 - 140 - 180
Coefficient of thermal conductivity λ_D W/(m·K)		0,037(110) - 0,040(140) - 0,043(180)
Specific heat J/(kg·K)		2100
Resistance to vapor diffusion μ		3
Compressive strength (kPa)		50(110) - 100(140) - 200(180)
Tensile strenght (kPa)		10(110) - 20(140) - 30(180)
Dimensional stability 48h, 70°C, 90% relative humidity		lenght Δεl ≤ 3% width Δεb ≤ 3% thickness Δεd ≤ 3%
Components		wood fiber, paraffin
Waste code (EAK)		030105 /170201

Fibertherm® protect

densities 230 - 265 kg/m³

Wood fiber panels for ETICS

produced with wet process

The **Fibertherm® protect** wood fiber panel is a directly plasterable panel for thermal insulation insulation of internal and external partition and perimeter walls. It has medium density, low thermal conductivity, high compressive strength and is water repellent.
Fibertherm® protect is permeable, e.g. steamed, and allows the regulation of humidity. Facade insulation protects the house like a good functional coat. The wall remains breathable and at the same time minimizes the loss of thermal energy in a sustainable way.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- plasterable insulating wood fiber panel;
- robust and long-lasting insulating panels in natural wood fiber;
- permeable and breathable but at the same time water repellent;
- significantly reduces structural thermal bridges;
- protects from heat and cold, and provides good sound insulation;
- protects the climate in a sustainable way thanks to the absorption of CO_2;
- almost unlimited design options thanks to different plastering systems;
- high safety thanks to the special male-female profile which contributes to the hermetic closure of the construction;
- light, particularly easy processing;
- recyclable, ecological, respects the environment.

Building uses

√ External thermal wall insulation system;
√ Internal thermal wall insulation system;
√ Insulation for walls in wood, masonry, stone;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.

Available sizes

tongue&groove edge's panels - 230kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
80	1325 x 600	1300 x 575	18,44	28	22,26	approx. 420
100	1325 x 600	1300 x 575	23,00	22	17,49	approx. 413

Available sizes

tongue&groove edge's panels - 230kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
80	2625 x 1175	2600 x 1150	16,80	14	43,18	approx. 744

sharp edge's panels - 230kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
80	2800 x 1250	16,80	14	49,0	approx. 823
100	2800 x 1250	28,20	11	38,5	approx. 920

tongue&groove edge's panels - 265kg/m³

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1325 x 600	1300 x 575	10,60	56	44,52	approx. 482
60	1325 x 600	1300 x 575	15,90	38	30,21	approx. 490

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	2625 x 1175	2600 x 1150	10,60	28	86,36	approx. 926
60	2625 x 1175	2600 x 1150	15,90	19	58,60	approx. 942

sharp edge's panels - 265kg/m³

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	2800 x 1250	10,60	28	98,00	approx. 1049
60	2800 x 1250	15,90	19	66,50	approx. 1070

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
20	1350 x 500	5,30	112	75,60	approx. 400

Technical characteristics

Features		Values
Manufacturing controlled according to		EN-13171
Identification code	230 kg/m³ 265 kg/m³	WF-EN 13171-T5-DS(70 \90)3-DS(10\Y)100 - TR 15(30) - WS1,0 - MU5 WF-EN 13171 -T5 - DS(70,90)2 -CS(10\Y)150 - TR20(30) WS1,0 - MU5
Reaction to fire according to EN 13501-1		E
Density kg/m³		230 - 265
Coefficient of thermal conductivity λ_D W/(m·K)		0,046(230) - 0,048(265)
Specific heat J/(kg·K)		2100
Resistance to vapor diffusion μ		5
s_d value (m)		0.20(40mm)/0.30(60mm)/0.40(80mm)
Thermal resistance R_D (m²·K)/W		0.80 (40mm)/1.25 (60mm)/1.70 (80mm)
Perpendicularity tolerance according to EN 824		3mm/m
Compressive strength (kPa)		100(230) - 180(265)
Tensile strenght (kPa)		15(230) - 20(265)
Dimensional stability 48h, 70°C, 90% relative humidity		lenght Δεl ≤ 3% width Δεb ≤ 3% thickness Δεd ≤ 3%
Components		wood fiber, paraffin
Waste code (EAK)		030105 /170201



Fibertherm® duo dry

Wood fiber panels for ETICS and roofs produced with dry process

density 180 kg/m³

The **Fibertherm® duo dry** wood fiber panel is a thermal and acoustic insulation for the creation of completely natural external and internal thermal coats (ETICS). The external thermal insulation systems offer natural protection against algae and moss on the facade and roof.
Their surface can be plastered directly without the need for further coatings. Also suitable as an under-roof and as an external wall for ventilated facades.
On roofs with an inclination of at least 16°, the special tongue&groove profile of **Fibertherm® duo dry** guarantees resistance to wind and rain without need to glue the joints. **Fibertherm® duo dry** protects the roof from rain and bad weather since the day of installation.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**86%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- convenient: only one panel for roof and wall;
- insulating panel that can be plastered directly;
- robust and long-lasting insulation panels;
- permeable and breathable but at the same time water repellent;
- significantly reduces structural thermal bridges;
- protects from heat and cold, and is a good sound insulation;
- made of fresh soft wood - sustainable climate protection thanks to the absorption of CO_2;
- it is perfectly combined with insufflated insulation, already starting from 40 mm thickness of the panel.

Building uses

√ External and internal thermal insulation system;
√ Insulation as undercover;
√ Insulation of ventilated facades;
√ Insulation for walls in wood, masonry, stone;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.

Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1880 x 600	1855 x 575	7,20	56	59,7	approx. 420
60	1880 x 600	1855 x 575	10,80	38	40,5	approx. 400



Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	3000 x 2500	7,20	28	210,00	approx. 1512
60	3000 x 2500	10,80	19	142,50	approx. 1539

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	6000 x 2500	7,20	15	225,00	approx. 1620
60	6000 x 2500	10,80	10	150,00	approx. 1620

Technical characteristics

Features	Values
German certification for outer thermal insulating systems	AbZ 33.47-1581
Identification code	WF - EN 13171- T5 - DS(70/90)3 - CS(10\Y)200 - TR30 - BS500 - WS1,0 - MU3
Density kg/m³	180
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,043
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	3
s_d value (m)	0.12(40)/0.18(60)
Thermal resistance R_D (m²·K)/W	0.90 (40)/1.35 (60)
Compressive strength (kPa)	200
Instant water absorption (kg/m²)	≤ 1,0
Tensile strength perpendicular to the panel (kPa)	30
Components	wood fiber, paraffin
Waste code (EAK)	030105 /170201

Fibertherm® duo

density 265 kg/m³

Wood fiber panels for ETICS and roofs — produced with wet process

The **Fibertherm® duo** wood fiber panel is a thermal and acoustic insulation for the creation of completely natural external and internal thermal coats (ETICS). The external thermal insulation systems offer natural protection against algae and moss on the facade and roof.
Their surface can be plastered directly without the need for further coatings. Also suitable as an under-roof and as an external wall for ventilated facades.
On roofs with an inclination of at least 16°, the special tongue&groove profile of **Fibertherm® duo** guarantees resistance to wind and rain without need to glue the joints. **Fibertherm® duo** protects the roof from rain and bad weather since the day of installation.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**91,3%**) it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- convenient: only one panel for roof and wall;
- insulating panel that can be plastered directly;
- robust and long-lasting insulation panels;
- permeable and breathable but at the same time water repellent;
- significantly reduces structural thermal bridges;
- protects from heat and cold, and is a good sound insulation;
- made of fresh soft wood - sustainable climate protection thanks to the absorption of CO_2;
- it is perfectly combined with insufflated insulation, already starting from 40 mm thickness of the panel.

Building uses

√ External and internal thermal insulation system;
√ Insulation as undercover;
√ Insulation of ventilated facades;
√ Insulation for walls in wood, masonry, stone;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal walls, partitions.

Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	kg/m²	panels/pallet	m²/panels	kg/pallet
40	1880 x 600	1855 x 575	10,60	56	59,7	approx. 643
60	1880 x 600	1855 x 575	15,90	38	40,5	approx. 620

Technical characteristics

Features	Values
German certification for outer thermal insulating systems	AbZ 33.47-1581
Identification code	WF - EN 13171- T5 - DS(70/90)3 - CS(10\Y)150 - TR20 - WS1,0 - MU5
Density kg/m^3	265
Reaction to fire according to EN 13501-1	E
Coefficient of thermal conductivity λ_D W/(m·K)	0,048
Specific heat J/(kg·K)	2100
Resistance to vapor diffusion μ	5
s_d value (m)	0.20(40)/0.30(60)
Thermal resistance R_D (m^2·K)/W	0.80 (40)/1.25 (60)
Compressive strength (kPa)	180
Instant water absorption (kg/m^2)	≤ 1,0
Tensile strength perpendicular to the panel (kPa)	20
Components	wood fiber, paraffin
Waste code (EAK)	030105 /170201

Fibertherm® black

Bitumen wood fiber panel

density 260 kg/m³

Panels with high compressive strength and high performance in **Fibertherm® black** bituminous wood fiber that effectively combine excellent thermal insulation with high soundproofing capacity for floors, walls and ceilings.
Fibertherm® black bitumen wood fiber panel is a separating element under concrete screeds, and is obtained by felting and drying wood fibers impregnated with 10 bitumen dried during manufacturing (percentage of bitumen reinforced on request).
It is an excellent sound-absorbing impact insulation; improves the sound absorption in the rooms and promotes the diffusion of water vapor; moreover, thanks to its high moisture absorption capacity, it prevents the formation of condensation and minimizes the formation of mold.
It can be used, to obtain top-of-the-range construction solutions, in combination with **BetonWood cement bonded particle boards**.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**81%**) present inside, it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- bitumen wood fiber as a second level of lift;
- male and female profile on all 4 sides;
- maintains full functionality and appearance, even with superficial damage;
- surface resistant to exposure to UV rays;
- particularly permeable for greater breathability;
- easy to work with common wood machines.

Building uses

√ Bitumen insulation as water protection;
√ Insulation for pitched and flat roofs, walls and curtain walls;
√ Weather protection without additional membrane;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal partitions, partitions.

Available sizes

tongue&groove edge's panels

Thickness mm	Size mm	Real surface mm	panels/pallet	Gross area m²/pallet	Net area m²/pallet	kg/m²	kg/pallet
22	2500 x 600	2480 x 585	52	78	75,4	5,83	approx.500
35	2500 x 600	2475 x 575	66	99	95,8	9,10	approx.960

Technical characteristics

Features	Values
Manufacturing controlled according to	EN 13986 and EN 622-4
Identification code	SB.E-E1
Reaction to fire according to EN 13501-1	E
Density kg/m^3	approx. 260
Resistance to vapor diffusion μ	5
Coefficient of thermal conductivity λ_D W/(m·K)	0,050
Thermal resistance R_D (m^2·K)/W	0,40(22) /0,70(35)
s_d value (m)	0,11(22) / 0,18(35)
Short-term water absorption [(kg/m^2]	≤ 1,0
Specific heat J/(kg·K)	2100
Flexural strength at 10% of compression δ_{10} (N/mm^2)	0,15
Compressive strength (kPa)	150
Components	wood fiber, aluminum sulphate, bitumen
Waste code (EAK)	030105 /170201

Bitumfiber

Bitumen wood fiber panel

density 280 kg/m^3

Panels with high compressive strength and high performance in **Bitumfiber** bituminous wood fiber that effectively combine excellent thermal insulation with high soundproofing capacity for floors, walls and ceilings.
The **Bitumfiber** bituminous wood fiber panel is a separation element under concrete screeds, and is obtained by felting and drying wood fibers impregnated with **10%** bitumen dried during manufacturing (percentage of bitumen reinforced on request) .
It is an excellent sound-absorbing impact insulation; improves the sound absorption in the rooms and promotes the diffusion of water vapor; moreover, thanks to its high moisture absorption capacity, it prevents the formation of condensation and minimizes the formation of mold.
It can be used, to obtain top-of-the-range construction solutions, in combination with **BetonWood cement bonded particle boards**.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**81%**) present inside, it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Advantages

- high compressive strength;
- made with renewable raw materials;
- high capacity to absorb ambient humidity, which constitutes a natural hygrometric regulator system;
- prevents the formation of condensation;
- easy to work with common wood machines;
- dermatologically tested, without any negative effect on the skin;
- manufactured in compliance with current European standards (EN13986 and EN622-4).

Building uses

√ External insulation for pitched and flat roofs;
√ Internal insulation for floors and roofs, ceilings, false ceilings;
√ Rigid insulation excellent for dry and wet screeds, floors and floors that can be walked on;
√ Insulation between beams or above (for non-walkable attics);
√ Rigid sound insulation;
√ External insulation for walls covered with BetonWood cement bonded particle board or rainproof coating;
√ Thermal-acoustic insulation of wooden structures (X-Lam);
√ Thermal-acoustic insulation of metal frame structures;
√ Insulation of internal partitions, partitions.

Available sizes

sharp edge's panels

Thickness mm	Size mm	kg/m²	panels/pallet	m²/panels	kg/pallet
10	2500 x 1200	2,20	114	342,0	approx.790
12	2500 x 1200	2,64	95	285,0	approx.790
15	2500 x 1200	3,30	76	228,0	approx.790
19	2500 x 1200	4,18	60	180,0	approx.790

Technical characteristics

Features	Values
Identification code	EN 622-4 SB.H-E1
Size tolerance - thickness	± 0.7 mm
Size tolerance - width / length	± 3 mm, ± 2 mm
Density kg/m³	approx. 280 (+20-10)
Weight kg/m²	4
Coefficient of thermal conductivity λ_D W/(m·K)	0,05
Thermal resistance R_D (m²·K)/W	0,20(10) /0,24(12)/ 0,30(15)/ 0,38(19)
Compressive strength (kPa)	50
Tensile strength (kPa)	≥10
Strength resistance test kN/m nails 3.35 mm to 75/150 mm cc nails 3mm to 50/150 mm cc	 1.58 N/A
Waste code (EAK)	030105/170201



Fibertherm® zell

Loose wood fiber for cavity filling

density from 32 to 45 kg/m³

Fibetherm® zell wood fiber is suitable for any type of thermal and acoustic insulation that requires the filling of cavities between structural elements, such as: on-site cavities, prefabricated elements for walls and floors to be filled with insulating material, floors and floors in the context of building renovation works.
Excellent insulation of the cavities in wooden structures; partitions, counter-walls, installation spaces.
This type of wood fiber, despite containing almost **100%** recycled material, is not **CAM** certifiable as boric acid is beyond the required limit.

Available sizes

Weight	Bags/Pallet
15	21

Weight	Bags/Pallet
270	1 industrial packaging
350	1 industrial packaging

Technical characteristics

Features	Values
European Technical Approval (ETA)	12/0011
Reaction to fire according to the standard EN 13501-1	E
Fire classification of the technical laboratory ITB (EN13501-1+A1:2010)	B-s2,d0
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Recommended bulk density ρ (kg/m³): • open blowing: mansard • Closed component cavities: roof, ceiling, wall	 approx. 32 approx. 35 - 45
Flow resistance r [kPa·s/m²] according to EN 29053 30 kg / m³	 >5
Resistance to vapor diffusion μ	1÷2
Specific heat J/(kg·K)	2100
Components	pure wood fibers
Waste code (EAK)	170201

Advantages

• for the insulation of cavities - it does not generate waste and adapts to any size, shape and thickness;
• open to diffusion, for greater building safety;
• safe processing with blowing machines of various sizes.

Building uses

√ Insulation of hollow parts in partitions, floors and beams;
√ Loose insulation for all closed cavities of roofs, walls, floors, ceilings and false ceilings;
√ Insulation for prefabricated buildings, filling of walls and roofs;
√ Insulation of metal and wooden frames;
√ Insulation of internal walls, partitions.



Fibertherm® floc

Loose cellulose flakes for cavity filling

density from 27 to 60 kg/m³

The cellulose flakes **Fibertherm® floc** is a bulk thermal and acoustic insulation for all closed cavities in roofs, walls and ceilings. Suitable for blow-in isolation methods. Ideal insulation for roof and floor renovations.
Also excellent for insulating cavities in wooden structures; partitions, counter-walls, installation rooms, load-bearing structures in roofs and floors.
Thanks to its high percentage of recycled material (**81%**) present inside, it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

Available sizes

standard cellulose

Weight	Bags/Pallet
15	21
350	1 industrial packaging

cellulose without boron

Weight	Bags/Pallet
15	21
350	1 industrial packaging

Technical characteristics

Features	Values
European Technical Approval (ETA)	IT EN 13171
Reaction to fire according to the standard EN 13501-1	E
Fire classification of the technical laboratory ITB (EN13501-1+A1:2010)	B-s2,d0
Coefficient of thermal conductivity λ_D W/(m·K)	0,038
Recommended bulk density ρ (kg/m³): • open blowing: mansard • Closed component cavities: roof, ceiling, wall	 approx. 27 - 39 approx. 40 - 60
Flow resistance r [kPa·s/m²] according to EN 29053 30 kg / m³ 45 kg / m³	 6,2 18,4
Resistance to vapor diffusion μ	1÷2
Specific heat J/(kg·K)	2100
Components	selected newsprint, inorganic mineral salts

Advantages

• insulation made of selected waste paper, also available in a boron-free version
• for the insulation of cavities - it does not generate waste and adapts to any size, shape and thickness;
• open to diffusion.

Building uses

√ Insulation of hollow parts in partitions, floors and beams;
√ Loose insulation for all closed cavities of roofs, walls, floors, ceilings and false ceilings;
√ Insulation for prefabricated buildings, filling of walls and roofs;
√ Insulation of metal and wooden frames;
√ Insulation of internal walls, partitions.

Fibertherm® canawool

Loose hemp fiber for cavity filling

Fibetherm® canawool loose wood fiber is suitable for any type of thermal and acoustic insulation that requires the filling of cavities between structural elements, such as: on-site cavities, prefabricated elements for walls and floors to be filled with insulating material, floors and floors in the context of building renovation works. Excellent insulation of the cavities in wooden structures; partitions, counter-walls, installation spaces.

It is guaranteed by constant checks carried out by external bodies which certify its high quality and, thanks to its high percentage of recycled material (**81%**) present inside, it fully complies with the **Minimum Environmental Criteria** and is **CAM** certified.

variable density

Available sizes

kg/bag	bags/pallet	kg/pallet	Bag sizes mm
15	18	270	400 x 400 x 800

Technical characteristics

Features	Values
European Technical Approval (ETA)	12/0011
Reaction to fire according to EN 13501-1	E
Reaction to fire according to standard 4102	B2
Recommended density ρ (kg/m^3)	depending on the density of the filling and the depth of the cavity
Specific heat c J/(kg•K)	1700
Resistance to vapor diffusion μ	1÷2
Components	hemp fibers
Waste code (EAK)	170604

Advantages

• made of loose hemp fibers for thermal and acoustic insulation;
• ideal for filling small openings and hard to reach areas;
• excellent complement to the rigid insulating panel.

Building uses

√ Insulation of cavities on site;
√ Loose insulation for all closed cavities of roofs, walls, floors, ceilings and false ceilings;
√ Insulation for prefabricated buildings, filling of walls and roofs;
√ Insulation of metal and wooden frames;
√ Insulation of internal walls, partitions.

Insulation plays a multifunctional role within the building.

The 8 key roles to consider when it comes to insulation materials.

THERMAL INSULATION	Thermal performance describes the structure's ability to react to the outside temperature.
ACOUSTIC INSULATION	The different densities within the structure guarantee the best acoustic performance.
FIRE PROTECTION	The building structure must provide fire safety above and beyond the required levels.
HEALTH	The health of installers and inhabitants must be an important factor in the choice of materials.
COMFORT	The insulation provides comfort by moderating the conditions of the external environment.
CONSTRUCTIVITY	Ease of installation and the impact of atmospheric agents are essential.
DURABILITY	A building must have the ability to resist decay and decay.
SUSTAINABILITY	The impact on the internal environment must be limited where possible.

Natural, Simple, Healthy

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