

Betontherm fiber

External-internal thermal insulation composite system
in insulating wood fiber and cement bonded particle boards

Reinforced external-internal thermal
insulation composite systems



| AREAS OF APPLICATION

Betontherm fiber is a modular system ideal for the realization of external/internal thermo-acoustic insulation composite systems (ETICS), with high mechanical resistance and high thermal displacement.

Thermal composite systems with an high insulating power, both internal and external, suitable for walls, ceilings, roofs. Suitable both for traditional constructions and dry wood systems in X-Lam or Platform frame.

Betontherm fiber is a thermal ecologic composite system made by high density cement bonded particle board (1350 Kg/m³) BetonWood and natural wood fiber insulating panel Fibertherm .

The reinforced thermal composite system Betontherm fiber is a modular system studied to give a simple, smart and functional solution for the realization of a thermal composite system (ETICS) suitable for public locations and buildings like hospitals, schools, libraries, prisons, even fire protection systems. It can be installed quickly and without specialized technicians and workers.

The system includes:

- Betontherm panels realized with two panels already coupled:
 1. a cement bonded particle board BetonWood wich is the layer with high mechanical strenght and high density on wich we can apply every finish material we desire. The panel is milled on the outer edges and on the surface corresponding the the plug housing. Edge milling makes it possible to reinforce the joints between panel and panel before cement render by laying a fiberglass tape adhesive on one side to prevent the formation of micro-cracks in the case of settling the building;
 2. a natural wood fiber panel FiberTherm which guarantees an high thermal-acoustic insulation;
- Betonfix plugs with an anti-thermal bridge protection cap;
- Betonnet glass fiber net and accessories;
- professional cement renders.

For more informations about the uses and the installation,
our offices are ready to answer your questions on www.betontherm.com



| MATERIAL

The Betontherm panels are provided in coupled solution with other insulating materials like cork (Betontherm Cork), or extruded polystyrene XPS (Betontherm Styr XPS), or other wood fiber panel types with reduced density like Betontherm fiber top or Betontherm fiber dry.

| SPECIFICATION

Supply and installation of external and internal reinforced insulation with panels already coupled of dimensions ... mm and thickness mm. BetonTherm is made with an hand panel in cement conglomerate Portland type and debarked Pine wood fiber, with high density ($\delta=1350 \text{ Kg/m}^3$) and with the following thermo-dynamics characteristics: declared thermal conductivity $\lambda=0,26 \text{ W/mK}$, specific heat $c=1,88 \text{ KJ/Kg K}$, water vapour diffusion resistance factor $\mu=22,6$ and fire reaction class A2-fl-s1, according to the standard EN 13501-1. The wood used in the processing of cement is from forests controlled by FSC reforestation cycles and pressed with water and hydraulic binder (Portland cement) with high cold compression ratios.

The other panel represent the insulating layer and is realized in wood fiber FiberTherm dry processed according to the standards EN 13171 and EN 13986 under constant quality control.

The material is characterized with the following thermo-dynamic characteristics: density $\delta=160 \text{ Kg/m}^3$, declared thermal conductivity $\lambda=0,039 \text{ W/mK}$, specific heat $c=2.100 \text{ J/Kg K}$, water vapour diffusion resistance factor $\mu=5$ and fire reaction class E, according to the standards EN 13501-1. The wood used in the processing comes from forests controlled by FSC reforestation cycles.

| TECHNICAL CHARACTERISTICS Betontherm fiber

Cement bonded particle board

Density ρ [kg /m ³]		1350
Reaction to fire in order to the standard EN 13501-1		A2-fl-s1
Thermal conductivity coefficient λ_D [W / (m * K)]		0,26
Specific heat c [J / (kg * K)]		1.880
Steam penetration resistance μ		22,6
Coefficient of linear thermal expansion α		0,00001
Swelling in thickness after 24h of storage in water		1,5%
Superficial PH value		11
Flexural strength σ [N / mm ²]		min.9
Transversal tensile strength N [N / mm ²]		min.0,5
Air permeability l /min. m ² Mpa		0,133
Modulus of elasticity E [N / mm ²]		4500
Shear strength τ [N / mm ²]		0,5
Resistance to distributed load kPa		9000
Resistance to concentrated load kN		9

| TECHNICAL CHARACTERISTICS Betontherm fiber

Wood fiber panels FiberTherm

Produced and supervised according to	DIN EN 13171
Board designation	WF-EN 13171-T4-CS(10 \Y)50-TR 2,5-WS 2,0-AF100
Fire class according to EN 13501-1	E
Declared thermal conductivity λ_D W/(m*K)	0,039
Declared thermal resistance R_D (m ² *K)/W	2,10(80) / 2,60(100) / 3,15(120) / 3,65(140) / 4,20(160)
Density kg/m^3	approx. 160
Water vapour diffusion resistance factor μ	5
sd value (m)	0,4(80)/0,5(100)/0,6(120)/0,7(140)/0,8(160)
Specific heat capacity c J/(kg*K)	2.100
Minimum compression strength at 10% deformation σ_{10} (N/mm ²)	0,05
Minimum compression strength (kPa)	50
Tensile strength perpendicular to face \perp (kPa)	$\geq 2,5$
Declared level of airflow resistance (kPa*s)/m ²	≥ 100
Raw material	wood fiber, glue between layers
Waste code (EAK)	030105/170201



| AVAILABLE DIMENSIONS **Betontherm fiber**

		cement bonded particle board (mm)		
thicknesses (mm)		16	18	20
wood fiber	80	•	•	•
	100	•	•	•
	120	•	•	•
	140	•	•	•
	160	•	•	•
Sizes (mm)		1200 x 600	1200 x 480	1200 x 500

| PLUS ADVANTAGES OF BETONTERM SYSTEMS

+1 Fire resistant

The thermal composite systems **Betontherm fiber, cork and styr** thanks to the external cement bonded particle board with a fire class A2 are suitable for fire escape ways, schools, hospitals, public buildings in which there are insulation and safety needs.

+2 Excellent mechanical resistance

The thermal composite systems **Betontherm fiber, cork and styr** having a cement bonded particle boards with a thickness from 16 to 20 mm, offer a high mechanical resistance, not only for hanging accessories on the surface but also for resisting vandalism.

+3 Ecological material

The thermal composite systems **Betontherm fiber and cork** are produced and certified by greenbuilding because they are realized with natural, ecological and recyclable materials.

+4 High noise reduction

The thermal composite systems **Betontherm fiber, cork and styr**, combining panels with different densities, have the advantage of effectively breaking down a wide range of acoustic frequencies, even very high.

+5 Extreme ease of installation

The thermal composite systems **Betontherm fiber** using for every panel 5 plugs with steel core and with a load capacity of 150 kg each, they allow the panels to be fixed securely to the masonry without gluing or without having to restore the underlying plaster.

+6 Safety first of all

The thermal composite systems **Betontherm fiber** can be used as attic and ceiling insulation, increasing security in case of earthquakes/fire more effectively than traditional materials.

| CERTIFICATIONS

The **Beton Therm** panels are produced with CE certified materials in accordance with current regulations. Product certificates are available on request.



Head office:
Via Falcone e Borsellino, 58
I-50013 Campi Bisenzio (FI)

T: +39 055 8953144
F: +39 055 4640609

info@betonwood.com
www.betonwood.com

BTHF IR.18.01

| TECHNICAL DRAWINGS OF THE MODULAR SYSTEM **Betontherm fiber**

Betontherm fiber 1200x500 mm thickness 20 + 80
This is only one of the panels combinations.

