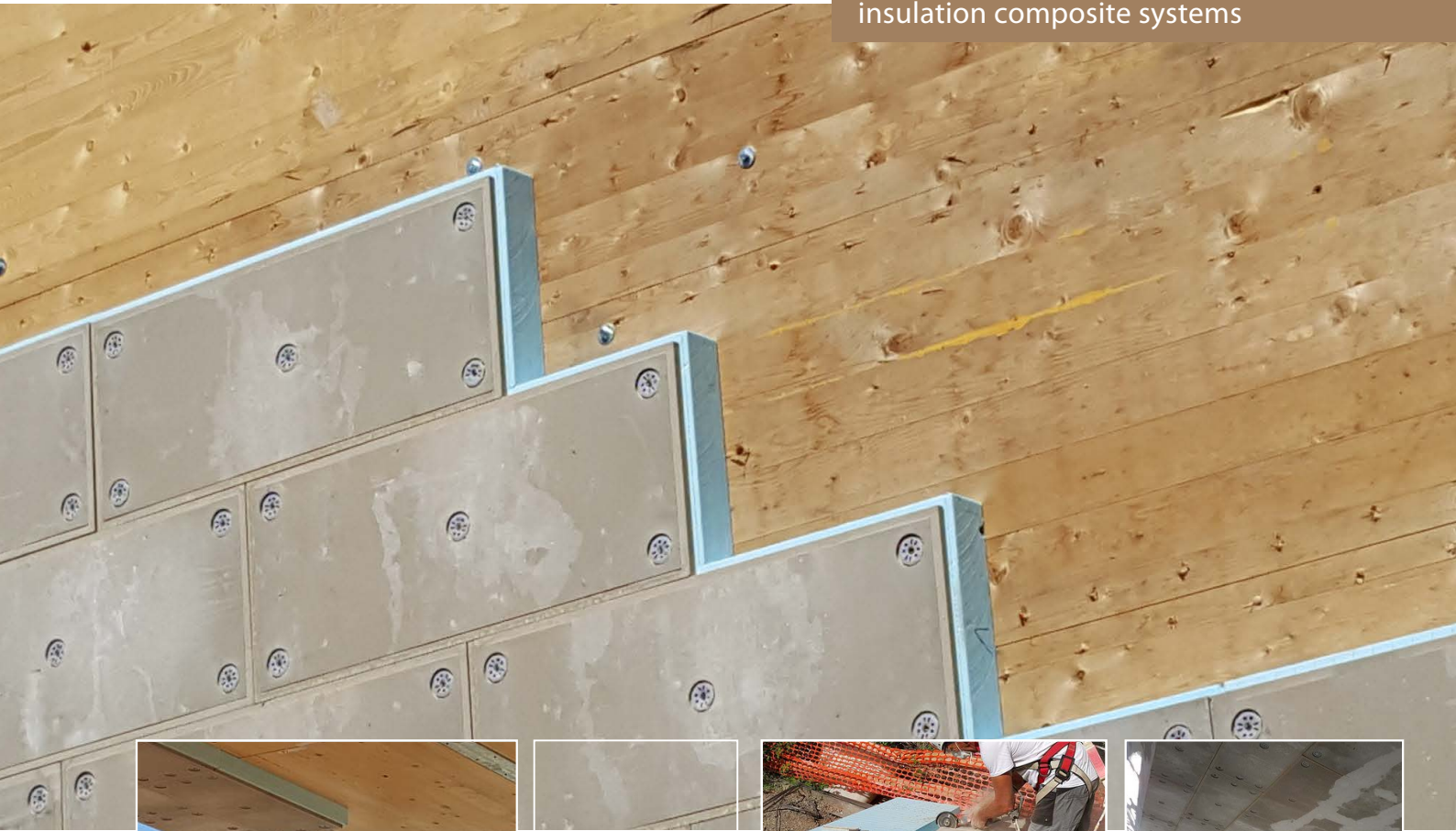


Betontherm styr XPS

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

Reinforced external-internal thermal
insulation composite systems



| AREAS OF APPLICATION

Betontherm styr XPS 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 styr XPS is a thermal composite system made by high density cement bonded particle board (1350 Kg/m³) BetonWood and an extruded polystyrene XPS. Building material certified CE.

The reinforced thermal composite system Betontherm styr XPS 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 which is the layer with high mechanical strength and high density on which we can apply every finish material we desire. The panel is milled on the outer edges and on the surface corresponding to 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. an extruded polystyrene panels (XPS) which guarantees an high thermal-acoustic insulation;
- Betonfix plugs with an anti-thermal bridge protection cap;
- Betonet 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 expanded polystyrene EPS (**Betontherm Styr EPS**), 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 hard 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 it is made in extruded polystyrene (XPS). This panel is characterized by the following thermodynamic characteristics: coefficient of thermal conductivity $\lambda = 0,026 \div 0,036 \text{ W / mK}$, specific heat $c = 1,450 \text{ J / Kg K}$, coeff. of resistance to vapor penetration $\mu = 50 \div 100$. The panel is supplied already coupled with dimensions ... mm. Building material certified CE.

| TECHNICAL CHARACTERISTICS **Betontherm styr XPS**

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 styr XPS**

Extruded polystyrene XPS panel

Density ρ [kg /m ³]		15 ÷ 35
Edges		sharp
Thermal conductivity coefficient λ_D [W / (m * K)]		0,026 ÷ 0,036
Specific heat c [J / (kg * K)]		1.450
Water vapour diffusion resistance factor μ		50 ÷ 100
Fire resistance class according to EN 13501-1		E
Compressive Stress at 10% deformation kPa		120 ÷ 250
Compressive Creep kPa		≤ 100 mm = 130 kPa > 100 mm = 110kPa
Dimensional stability under specified conditions 70°C; 90% r.h. %		≤ 5
Deformation under specified compressive load of 40 kPa and temperature conditions at 70°C %		≤ 5
Freeze-thaw resistance after long term water absorption by diffusion vol. %		≤100mm ≤ 1 >100 ≤200mm ≤ 2
Modulus of elasticity		12.000



| AVAILABLE DIMENSIONS Betontherm *styre* XPS

		cement bonded particle board (mm)	
thicknesses (mm)		16	20
polystyrene XPS	40		•
	60		•
	80	•	•
	100	•	•
	120	•	•
	140	•	•
	160	•	
Sizes (mm)		1200 x 600	1200 x 500

| PLUS ADVANTAGES OF BETONTHERM SYSTEMS

+1 Fire resistant

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

+2 Excellent mechanical resistance

The thermal composite systems Betontherm *fiber*, *cork* and *styre* 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 High noise reduction

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

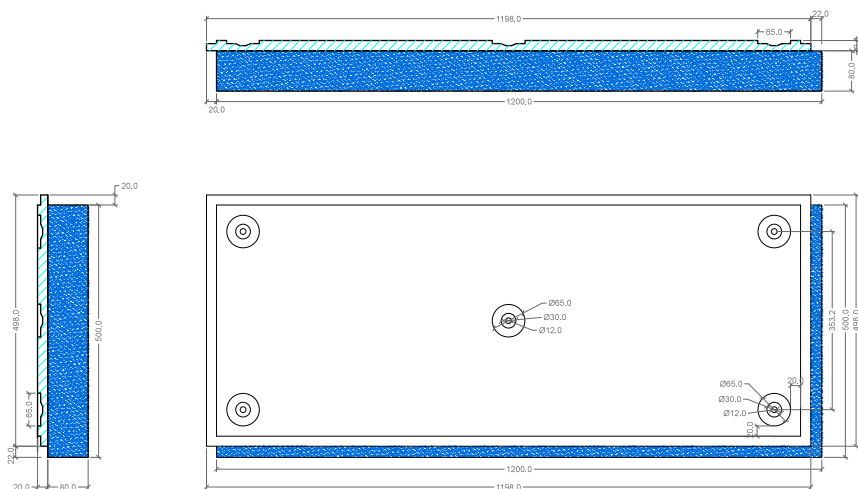
| CERTIFICATIONS

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



| TECHNICAL DRAWINGS OF THE MODULAR SYSTEM Betontherm *styre* XPS

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



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