Technical data sheet

Product:

ICB - Insulation Corkboard

Description:

Product 100 % vegetable, originated from cork.

This product originates from a **renewable and sustainable raw material**, since the cork is extracted **without killing or doing any harm to the tree.** The maintenance of the cork oak forest is an **eco-friendly activity**, keeping and preserving a very fragile and unique ecosystem.

The Insulation Corkboard is made from the expansion of the cork granules, by steaming. The agglutination of the granules is made with the resins of the cork, **without the use of any synthetic agents**, namely glues or solvents. It is presented in boards.

The physical and mechanical properties of the cork origins on a product that is elastic, permeable to steam, with long durability (without changing its properties) and with excellent thermal, acoustical and vibrations insulation features.

Supplier:

CORKLINK
Westfield Technologies Lda
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3885-482 Esmoriz
Portugal
www.corklink.com | info@corklink.com
Tel: +351 965836665

Technical features:

	Values	Norm
Volume mass / Density	**from 105 to 125 kg/m³**	NP EN 1602
Thermal conductivity coefficient	**from 0,036 to 0,040 W/mk**	EN 12667:2001
Tension to stress	**from 1,4 to 2,0 Kgf/cm²**	NP EN 12089:1997
Tension to compression at 10%	**≥ 100 Kpa**	NP EN 826:1996
Temperature o usage	**from -180 °C to +140 °C**	---
Permeability to steam	**386 ng/Pa.sm²**	NP EN 12086:1997
Resistance to the diffusion o steam	**μ = 7 - 14**	NP EN 12086:1997
Fire class	**E**	NP EN 13501-1:2007
Fire class – ETICS Systems	**B-s1,d0**	NP EN 13501-1:2007
Dimensions (Length / Width)	**1000 x 500** mm / **900 x 500** mm	NP EN 822
Thickness	from **10 to 300** mm	NP EN 823

Specification document: NP EN 13170:2001

Values of Thermal Insulation (**R** e m² k/W e **K** em W/m²k)		
Thickness	**R**	**W**
40 mm	1,000	1,000
50 mm	1,250	0,800
60 mm	1,500	0,667
80 mm	2,000	0,500

Thermal delay time	***Delay***
The thermal delay is the time, from the highest outside temperature and the highest inside temperature of a Wall, measured on a 24 hours period. The delay time should be higher than 9 hours, which represents the daily exposition time to the sun in the summer. A higher delay time prevents the wall from overheating during the day and to cool down during the evening, so it can reinitiate the cycle on the following morning.	**13 Hours** (in hours per 20 cm)

- ✓ Excellent behavior on the insulation of aerial and percussion noises;

Sound insulation o aerial sounds	
Description of the testing sample	*Insulation*
Masonry wall with perforated bricks, laid with 0.22 m thick mortar, not covered.	R_w = 44 dB (0,-2)
Masonry wall with perforated bricks, laid with 0.22 m thick mortar. The receiving side was covered with gypsum boards. The emission side was covered with polystyrene slabs, with 50mm thick and the volume mass of 20 Kg/m^3. A roughcast with 6 to 8mm thick was made with a cement based mortar with organic bonding, wrapped by two 10x10mm fiber glass net, was applied over the polystyrene slabs.	R_w = 45 dB (-1,-4)
Masonry wall with perforated bricks, laid with 0.22 m thick mortar. The receiving side was covered with 12mm thick gypsum boards. The emission side was covered with ICB- Insulation Corkboard slabs, with 50mm thick and the volume mass of 90 to 110 Kg/m^3. A roughcast with 6 to 8mm thick was made with a cement based mortar with organic bonding, wrapped by two 10x10mm fiber glass net, was applied over the ICB slabs.	**R_w = 50 dB (-1,-5)**
Description of the testing sample	*Insulation*
Double Wall, made with two perforated bricks, with the thickness of 0.11m each, with air void with 0.06m thick. The exterior of the masonry wall has roughcast with 0.015 m thick. On the inside face of one of the walls it is also applied roughcast with 0.01 m thick, on which are bonded the ICB slabs, with 0.04 m thick and with the volume mass of 90 to 110 Kg/m^3.	**R_w = 53 dB (-1,-5)**

Tests made by LNEC as per NP EN 20140-3:1998 and results as per EN ISO 717-1:1996 – (Bulletin n.º 60/61/62/65/2007)

Insulation of percussion noises	
Description of the testing sample	*Insulation*
Testing pavement without covering.	$L_{n,o,w}$ = 80 dB
Floating pavement, made of a concrete slab, with 0,04m thick, covered with pine tiles, laid over a 0,07m thick concrete layer, made of re-granulated expanded cork, size 2mm to 9mm, 0,01m regularization layer made of mortar and with insulation expanded corkboard 0,02m thick, with the volume mass of 90 to 110 kg/m^3.	**$L_{n,o,w}$ = 55 dB**
Floating pavement, made of a concrete slab, with 0,04m thick, covered with pine tiles, laid over a 0,07m thick concrete layer, made of re-granulated expanded cork, size 2mm to 9mm, 0,01m regularization layer made of mortar.	**$L_{n,o,w}$ = 62 dB**

Tests made by LNEC as per NP EN 140-8:1997 and results as per EN ISO 717-1:1996 – (Boletin n.º 67/68/2007)

- ✓ High elasticity.

Ecologic indicators	
Energy needs	Supplied in **90%** by the use of **BIOMASS** **(Energy supply neutral in CO_2 emissions)**
Primar energy	Very low
Carbon consumer	
100% Recyclable	
Reduces the green house effect	

- ✓ The production of Expanded Corkboard presents very low energy consumption, about 4 MJ per Kg, that is four times less than the mineral wools and twenty times less than the synthetic foams.
  ("Eco-Materiais"- Ignasi Pérez Arnal)

Norm in use:

- **CE code:** *ICB-EN 13170 – T2 – CS10 (90)* **Year of CE mark:** 2004

Norm of reference: EN 13170:2008

This norm is referred to the expanded cork products used in the thermal insulation of buildings and describes the product characteristics and includes the indications regarding the testing methods to be used on the determination and information related to the evaluation of the conformity, to the marking, the labeling and packing.

Acredited Laboratories for the CE Mark	
External control laboratory	**LNEC** – Laboratório Nacional de Engenharia Civil
ITT Laboratory	**CSTB** – Centre Scientifique et Techique du Bâtiment
	LGAI – Technological Center AS

Qualification o the material associated to the interiour air emissions	
Classification: ***A+*** *(As per French Regulation and ISO16000 (2006) in force)* Credited Laboratory: ***LQAI*** – Laboratório da Qualidade Ar Interior	ÉMISSIONS DANS L'AIR INTÉRIEUR A+ A+ A B C

Certificate N.º 92/2011 – Test report LQAI.MC.56/11

Packing and storing:

The product is wrapped in retractile polyethylene film that protects it during storing, transport and handling.

Once the wrapping is removed and until application, this product should be protected from the rain.

Number of slabs per pack:	01 to 30 slabs (according to thickness)
Weight per pack:	Around 18 kg

Applications:

- ✓ **In rooftops:**

  To better use the **Expanded Corkboard** during the application, there must be taken cautions in the protection from the rain water, of the surfaces to be insulated, as this water originates an increase on the thermal conductivity coefficient. However, the afterwards temperature increase will result on a rapid liberation o the moist, without changing the thermal conductivity coefficient.

- ✓ **Covering ceilings and walls:**

  When the fixing of the ICB slabs is made by the use of synthetic bonding, namely on the phonic insulations with cork at sight from the interior, there must be taken the adequate ventilation cautions.

Application:

The slabs of **Expanded Corkboard** should be applied preferably with crossed and compressed joints. The cuts may be made by the use of a handsaw or an X-act knife type instrument for the thinner thicknesses (from 10 to 20mm).

Fixing processes:

In walls:

- Adhesive masses (by points throughout the entire surface);
- Polypropylene fixing nails;
- Contact glue (synthetic or water based).

On rooftops and floors:

- Bitumen primers;
- Polypropylene fixing nails;
- Adhesive masses (by points throughout the entire surface).

Unprotected special exterior applications:

- Mechanical (screws + O ring);
- By adhesive type bonding (glues/waterproofing).

The **Expanded Corkboard** is practically inert and is totally compatible with all building materials.

Due to its natural origin, the cork composites are totally unchangeable to boiling water at 100º C, hydrochloric acid, sulphuric acid (and to its salts) and oil based products, which allow the waterproofing on flat decks directly on the surface o the ICB slabs (hot or cold).

Hygiene, Safety and Fire risk

- ✓ Adequate protection of the breathing ways, during the cutting and application of the product is recommended.
- ✓ The combustion of the **Expanded Corkboard** is slow and does not release toxic fumes, cyanides or chlorates. The release o carbon monoxide and carbon anhydride is minimal.

Residue management:

- The **Expanded Corkboard** is a product **100% recyclable**, **reusable** and **biodegradable**.

  At the end o the usage period (often imposed by the end of the usage period of the building), whenever is possible, the product must be separated from the mortars and other masses, metallic fixations, etc, at the construction site. It should be delivered to a licensed residues management company, which reintroduces it into the production process without any change, proceeding to its convenient recycling.

  Recycling company:

  sofalca – Sociedade Central de Produtos de Cortiça, Lda.

  - **17 06 04** – Insulation materials not included in 17 06 01 and 17 06 03 » Operations **R3, R13**

  In the case of some waist is released and incorporated into the soil, there is no inconvenience, as this is a **natural** and **biodegradable product**.

- The polyethylene film, used in the packing, must be placed on the adequate eco-point, for recycling.

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