PRODUCT INFORMATION

EnviraBoard

1 Product information

It is important to highlight that all the test results, approvals and certifications referred to in this section was obtained on the boards from an earlier production in Denmark.

To comply with EU regulation on sale of building materials, any boards from a newly established production facility, must be taken through the required tests and verifications to obtain these approvals and certifications. All such approvals and certification are always and only granted to the specific production site.

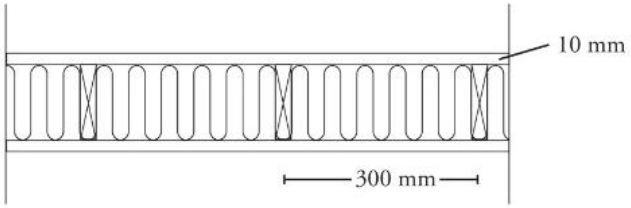
1.1 ETA / CE certificate

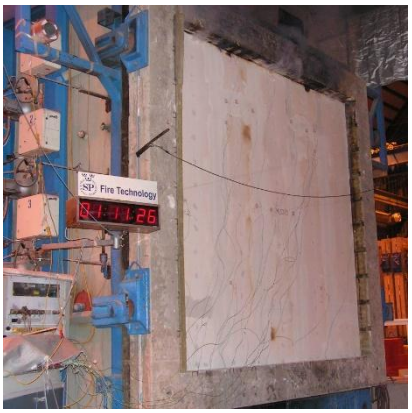
The EnviraBoard obtained a European classification no. ETA 06/0104. The certification covers:

- Fire resistance
- Biological properties
- Physical properties
- Tolerance values by moisture impact
- Documentation for the production process

1.2 Fire classification

Reaction to fire:	A2-s1,d0
Fire protective class:	K10
Fire resistance classification:	EI 60





1.3 Sound dampening effect

Coincidence frequency of EnviraBoards:

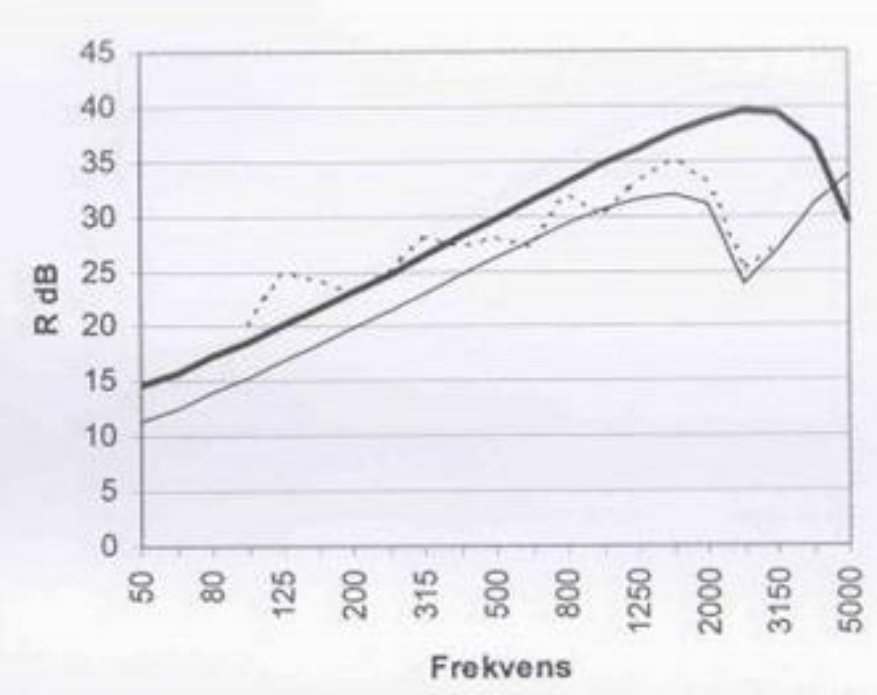
- fc = approx. 4800 Hz
- Rw = 34 dB

Fc for EnviraBoards are 4877 Hz and 2769 Hz for gypsum

Rw for EnviraBoards = 34 dB

Rw for Gypsum board, calculated = 28 dB

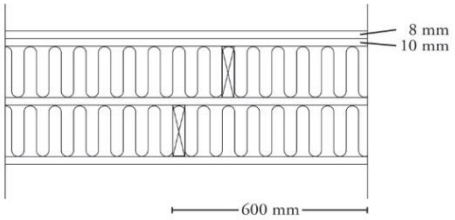
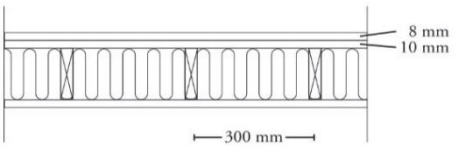
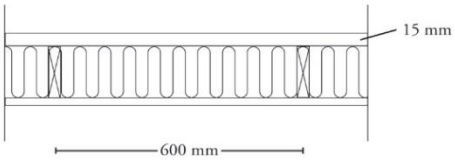
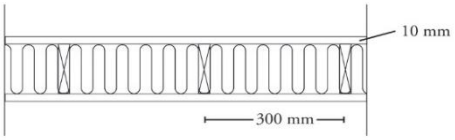
Rw for gypsum board, measured



The enhanced black line is the EnviraBoard.

The thin black line is the gypsum board.

Values measured by Delta Acoustics Denmark

Type of walls	EnviraBoard Rw (dB)	EnviraBoard R'w (dB)
	66	60
	47	43
	52	48
	43	39

* Rw is assessed and assumes that the connecting walls and ceilings are at the same level.

1.4 Bracing capacity

Boards are able to transfer wind-force from construction and obtain stability.

Calculations and tests according to Eurocode 5 EN 1995-1-1.

2 Environmental benefits

EnviraBoard is designed to deliver on these ambitions; however, full validation can only be achieved once production is scaled and independently verified through third-party testing.

In producing and using EnviraBoard, we aim to provide a range of environmental benefits:

- Offers a solution to a waste disposal challenge within the paper recycling industry
- Utilises secondary waste material as a primary raw input
- Contributes to a net reduction in carbon emissions through the binding process, compared to conventional waste disposal
- Can be recycled and reprocessed into new EnviraBoards, supporting circularity
- Meets contaminant levels below the maximum thresholds set by Clean Soil Criteria

2.1 Good fit to the Circular Economy

- The recycling process results in paper made from recycled newspapers and magazines
- The residual waste from the recycling process is a secondary waste material – a paper sludge waste (which is clean from toxins and is environmentally safe)
- EnviraBoard is using this paper sludge waste as raw material
- EnviraBoards can be recycled and used to produce new EnviraBoards

2.2 Reduced carbon emission

By using secondary paper sludge waste as raw material to produce the EnviraBoard, we aim to independently verify a net reduction in carbon emission (compared to the typical way of incinerating the waste).

For a typical paper recycling facility with a waste level of around 140,000 tonnes of paper sludge waste per year, the potential reduction is around 30-40,000 tonnes CO_2.

2.3 EU regulation on waste prevention

The EU is currently introducing legislation on waste prevention and to increase the uptake of secondary raw materials.

Not only does EnviraBoard use waste as raw material, EnviraBoard is using a secondary waste (the paper sludge waste) which is the result of a primary waste handling (the paper recycling facility, turning newspapers and glossy magazines into recycled paper).

2.4 UN's Sustainable Development Goals

EnviraBoard is aligned with UN's sustainable Development Goals;

SDG 8 Decent Work and Economic Growth

SDG 9 Industry, Innovation and infrastructure

SDG 11 Sustainable Cities and Communities

SDG 12 Responsible Consumption and Production

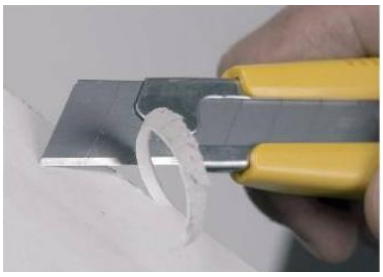
3 Detailed technical specifications

Technical specifications	Value / units
Thickness	+/- 0.3mm
Length	+0/- 2mm
Width	+0/- 2mm
Density	1,200kg/m3 (+/- 150kg)
Modulus of Elasticity	1,200 MPa
Bending strength, Longitudinal	> 7 MPa
Bending strength, Transverse	> 3.5 MPa
Tensile strength	> 0.5 MPa
Screw bonding, surface	0.3 kN
Impact strength	22
Linear expansion by changing in relative humidity From 65 to 85 %RH From 65 to 25 %RH	 0.9mm/m -1.84mm/m
Water vapour permeability at 93/50% RF, 23°C Z-value	1.0 GPa s m^2/kg
Thermal heat conductivity at 10°C	0.29801 W/(mK)
Thermal insulation $R_{messured}$	0.170m^2 K/W
Airborne Sound insulation R_w (depending on thickness of board)	30-40 dB
Frequency of Coincidence fc	> 4.5 KHz
Reaction to fire, Euroclass	A2-s1, d0
Resistance to fire, Fire protective class	K 10
Fire resistance classifications for an insulated non-loadbearing wall of 10mm board on each side of 38 x 73mm wooden studs	EI 60
Surface	Paper
Colour	Bright white

4 User advantages – EnviraBoard properties

4.1 Adjustment and fitting

Easy to adjust



- Cut and break the board.
- Cutting out is easy to do with a knife or a handsaw.
- The board edges can be planed. The cut off is like shavings.
- Saves time and gives less dust in the workplace.
- Better environment for carpenters and craftsmen.

4.2 Ergonomic

Easy handling

- Handling weight < 20 kg
- Sizes of boards is designed for easy handling.
- Simple in transportation.
- Handy handling.
- Easy to install.
- Saves time.
- Good application conditions for craftsmen.

4.3 Installation

Quick and handy installation

- Easy to fasten with nail or clamp gun.
- Special base for nail guns with correct distance to edge.
- Easy to fasten boards with screw machine.
- Screws bind directly into the board.
- Easy fastening means time saved and good quality wall building.
- Easy tool handling for installers and carpenters.

4.4 Cutting of recess

Boards are compact for cutting

- High accuracy, smooth edge.
- Cut outs for electrical installations are easily established with a drilling machine.
- Saves time.
- Facilitates precision work.
- Easy work for the electrician.

4.5 Filling

Special designed edge

- Edge designed by and for painters.
- The design secures a correct application of the paper strip.
- Filling only necessary in filling areas.
- Saves time and offers good quality of work.
- Easy for the carpenter and the painter.

4.6 Priming

Simple and quick priming

- Only the filled areas needs priming.
- The designed filling-areas and the very small holes from nails and clams are filled.
- Require fewer handlings and saves time for painter.

4.7 Painting

Top quality finish in few layers

- The smooth paper covered surface of the board is a perfect ground for painting.
- No priming needed.
- Each coating gives a good covering and dries fast.
- High quality and surface finish.
- Gives fewer operations and saves time for the painter.

4.8 Lists and skirting

Easy fastening

- Screws and nails fix/binds directly into the board.
- The strong binding is perfect for the joiner when installing skirting, panels and lists in ceilings.
- When using the nail gun for fastening the joiner will save time.
- Several options are available.
- Facilitates easy work for the joiner/craftsman.

4.9 Sound

Dampening of sound and acoustic effect

- The material of the boards provides a high reduction of sound transmissions.
- The density of the boards and the elasticity module offer a good acoustic atmosphere.
- Less material to get a high reduction.
- Provides better acoustic environment in rooms.
- Beneficial for end-users and property owners.

4.10 High impact resistance

High resistance of impacts

- Ideal for houses and institutional buildings.
- The elasticity of the board provides an excellent impact resistance.
- The impact resistance is measured to factor 22, twice as much as for traditional boards for internal lining.
- The board provides a longer durability and better quality of life.
- Benefits the end-users and property owners.

4.11 Hanging

Screws and nails fix/binds direct in boards without plugs

- Boards can take up to 30 kg on each screw.
- Beneficial when hanging pictures and curtains.
- It saves time, no drilling is needed.
- Offers high flexibility for craftsmen and end-users.

4.12 Fire protection

High protection and long resistance from fire

- The solid boards have remarkable fire resistant properties.
- With only one layer of 10 mm boards on each side of framework, the resulting fire resistance is more than 60 minutes.
- Provides efficient fire protection with less materials and reduced construction time, ideal in wood construction.
- Beneficial for end-users and property owners.

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