AireX –

Impact resistance

AireX Panels can be hit by two types of impacts:

1: Soft Body Impact

Simulated by swinging a polyurethane bag filled with sand and the panel surface causing impacting energy levels of 60 Joules.

The soft body impact test is carried out first as it is typically non-destructive.

2: Hard Body Impact

Simulated by swinging a steel ball of 1.0 kg. against the panel surface.

The hard body impact test is carried out last as it is destructive.

AireX Panel mock-up of wall section

Data classification according to BS 5234, similar to EN12602, EN 771-4 and ASTM C744.

Density of AireX Panel	Classification maximum
350kg/m3	Class D
450kg/m3	Class C
550kg/m3	Class B
650kg/m3	Class B

Results based on AireX Panels produced using Aalborg Portland Basis Cement (CEM-II 52.5R).

Class D: Residential housing

Class C: Offices, hotels, some commercial buildings

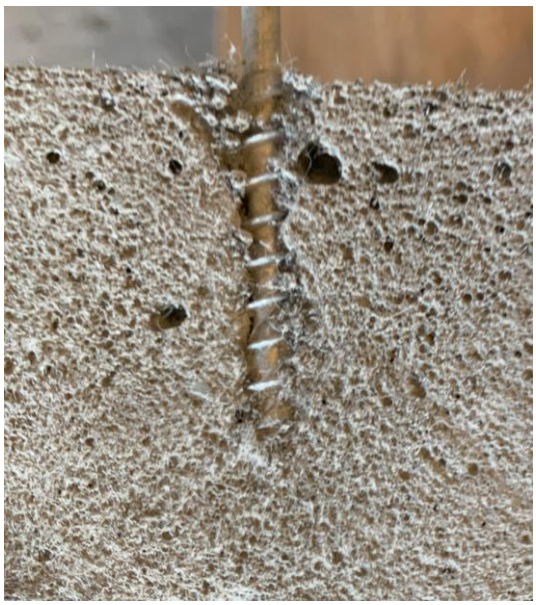
Class B: Commercial buildings, shops, some industrial and public buildings

AireX –

Pullout strength test

A pullout strength test of an AireX wall panel was made to assess the usability of std. steel screws originally intended for wooden structures.

The purpose was to document the use of std. screws directly in the AireX concrete without the use of plastic plugs and pre-drilled holes, as are traditionally required for fixing loads to light-weight concrete walls e.g. made from AAC, cellular concrete, EPS concrete, LECA etc.



Cross section picture of tested setup.

Data on tested materials

AireX concrete panel:

Density of AireX concrete	**550kg./m3**
Fibers used	**12mm, 18um, PP (Polypropelyne) 1.4kg./m3**
Wall panel depth	**100mm**
Curing time	**+28 days – fully cured**

Steel screw:

Supplier	**AVVIO Gmbh Co KG**
Diemensions	**5,0mm x 70.0mm**
Installing method	**Power drill**
Installing depth	**40mm**
Pull method	**Gradually increased vertical pull**

AireX –

Pullout strength test

Testing method and results.

A total of 5 similar tests was conducted in order to confirm results.

The test was conducted by pulling vertically in the screw using a gradually increased loading technique until the screw would fully exit the concrete panel.

Results

All tests resulted in a maximum pull out strength averaging 80kg. with less than 5kg variance.

Recommendation

Based on the test, it is recommended to use std. steel screws for the majority of fixation purposes including doorframes, windows, kitchen cabinets etc.

For safety reasons and long-term durability, any fixation job should apply 2-3x more fixation capacity than needed to carry the weight or stress of the installed part.

In order to further increase the fixation capacity, screws of larger dimensions in width, length and size of threading can be used.

This test was conducted by Abeo staff at Abeo's laboratory in Denmark on November 3rd 2023, further details are available upon request.

AireX –

Sound Performance Guide

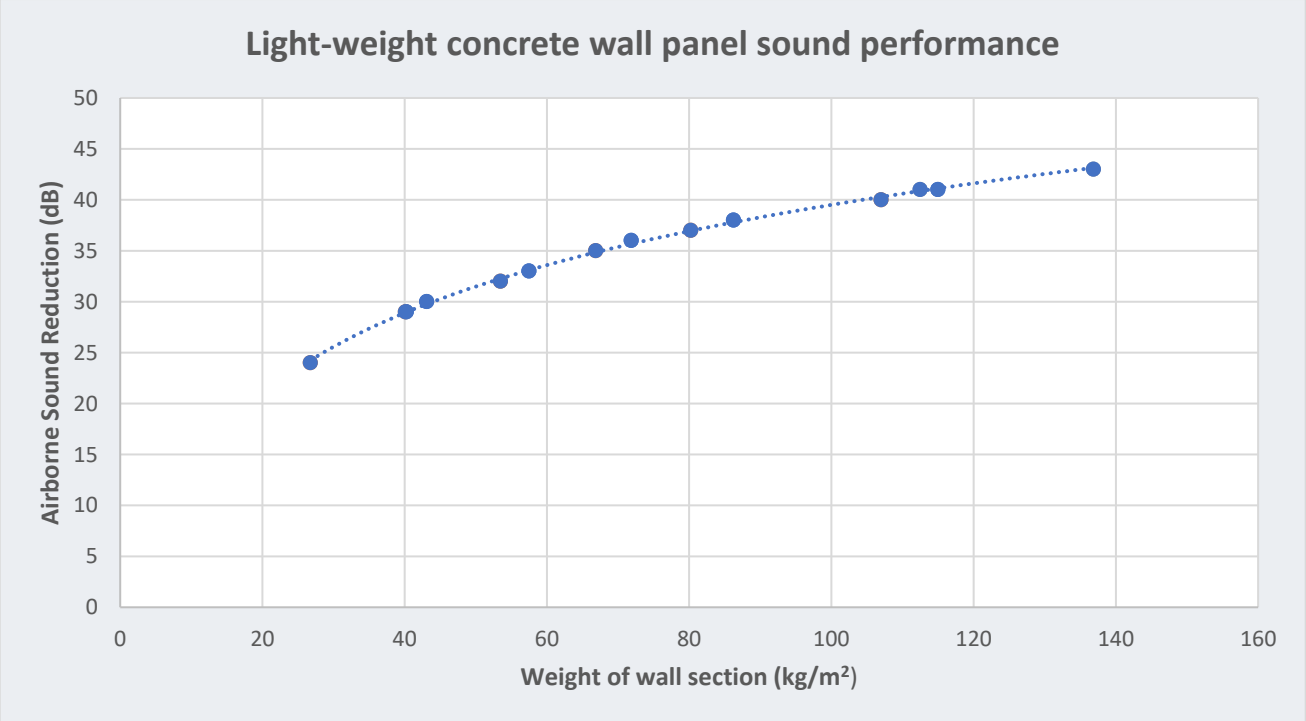
The Sound Performance of AireX in applications such as wall panels, partitions and facades, can be calculated based on the density and depth of the wall section.

As the sound performance of AireX concrete is identical to that of Autoclaved Aerated Concrete (AAC) amble empirical data and calculation models are readily available.

The sound performance is derived from a combination of the used concrete density and the depth of the wall = the total weight pr. m2 of wall section.

In cases where an increased level of sound insulation is required, the AireX system allows for the use of insulated **AireX Sound Panels** (see page 2) enabling adherence to even the highest standards of sound insulation often required in residential and hotel construction.

Sound performance of a traditional AireX wall panel section relative to kg./m2.



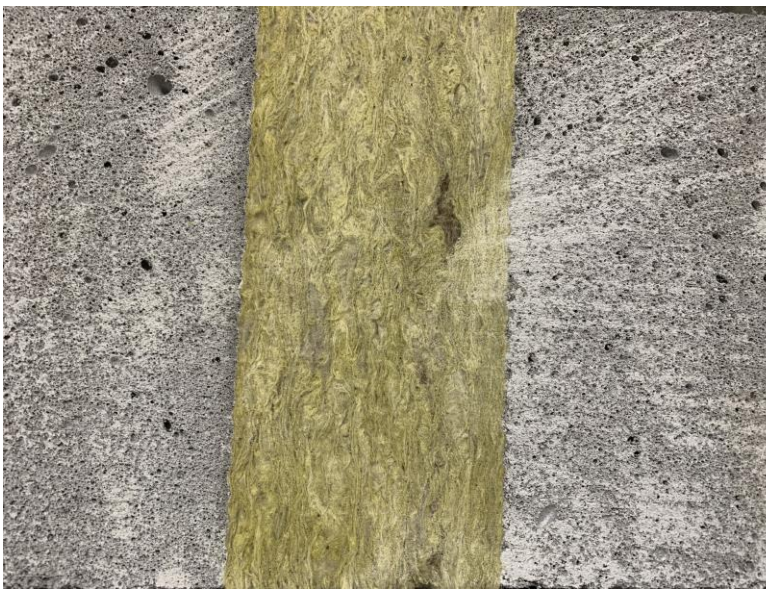
AireX –

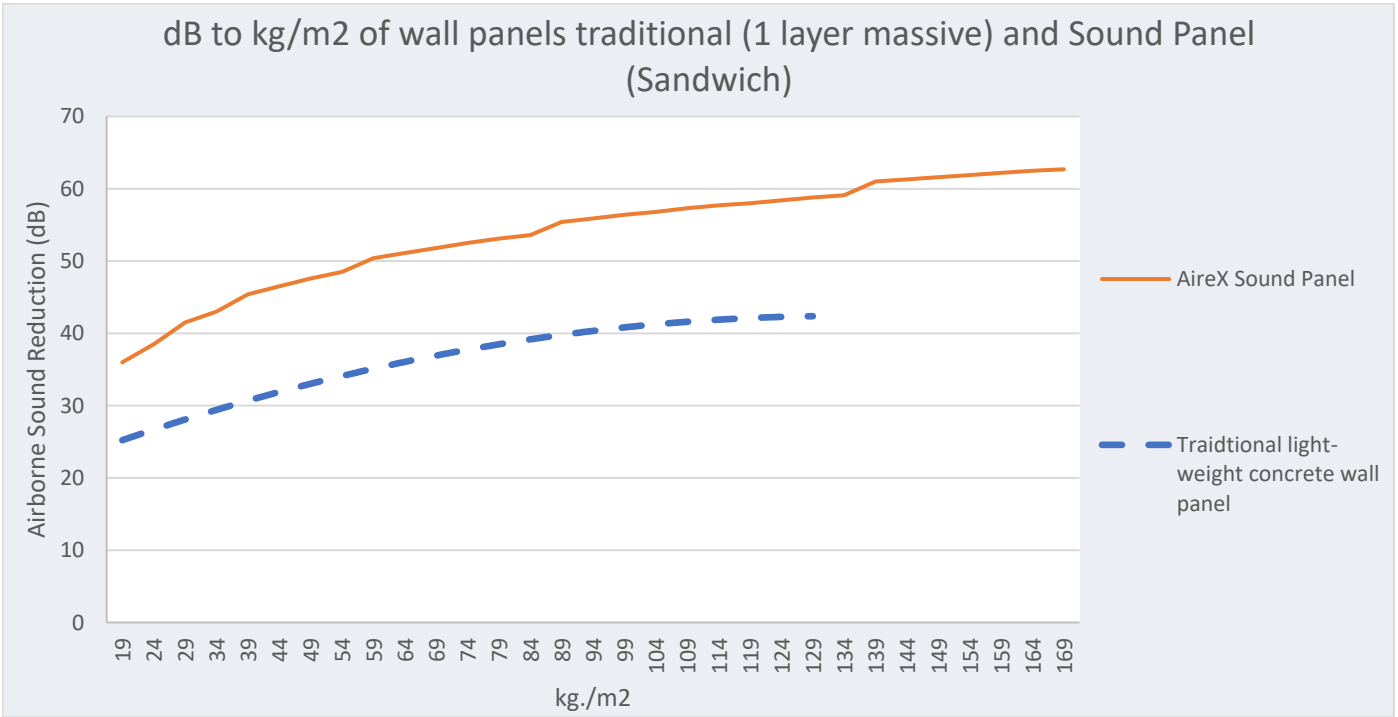
Sound Performance Guide

The **AireX Sound Panel** combines two layers of concrete surrounding a middle layer of insulative material thus creating a sandwich structure increasing the airborne sound insulative effect relative to the mass in kg./m2.

The objective of the **AireX Sound Panel** is to enable a greater sound insulative effect, without increasing the depth or weight of the wall section.

The **AireX Sound Panel** consist of two layers of AireX concrete typically with a depth of 25-50mm and a density of 700-1.400kg./m3, in between the two layers of concrete are 40-50mm of insulative material such as stone wool/rockwool, glass wool, PU/PIR, EPS or a similar very light insulative material.





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AireX –

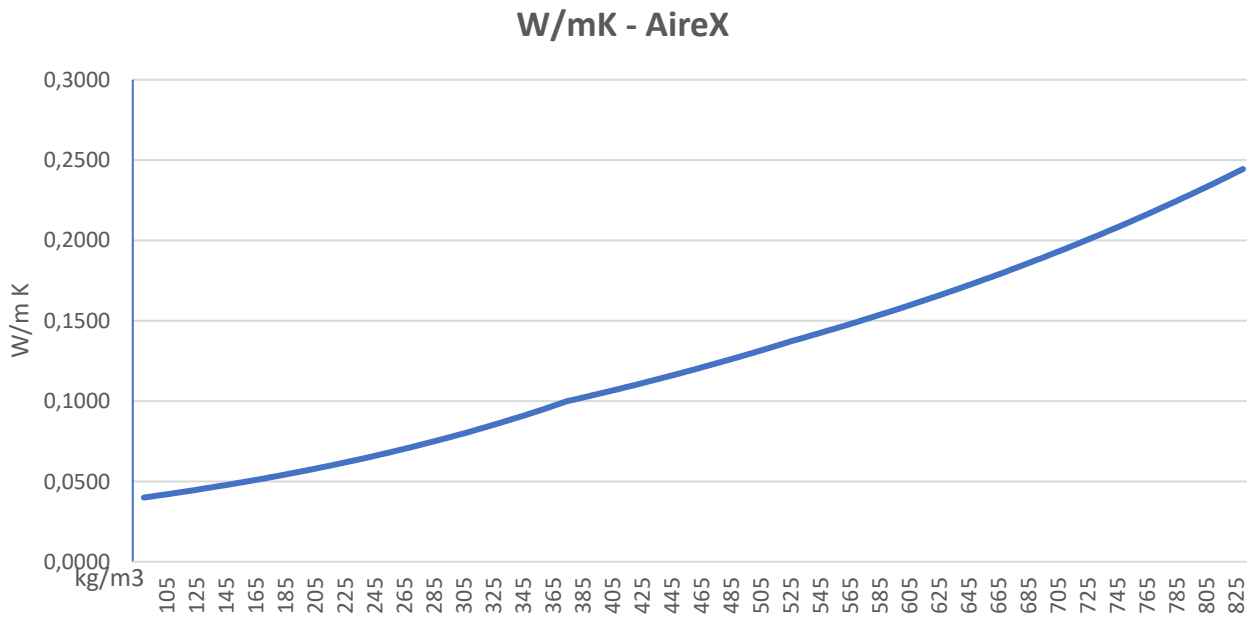
Panel Thermal Performance

AireX concrete is typically produced in densities ranging from 200-900kg./m3 depending on application and can be produced in densities as low as 80kg./m3.

Due to the relatively low densities achievable in AireX, a significant level of thermal insulation can be reached by combining the low density material with appropriate depths of walls and roofs constructed using AireX concrete.

The below graph shows the thermal insulative capacity of AireX concrete relative to density.

When produced in very low densities, AireX can insulate at levels comparable to traditional insulative materials such as EPS, stone wool, glass wool and PU foam.



The above graph is based on calculated data verified by laboratory tests conducted on behalf of **Abeo A/S** by **Teknologisk Institut, Gregersensvej 2630 Taastrup, Denmark** in accordance with **DS/EN 12667:2001 and ISO 8302:1991**, report ref. no.: **23011** and **22068** as well as additional tests conducted by **Bahrain Ministry of Works Manama, Kingdom of Bahrain, Juffair, Building 1221, Road 4226, Block 342** in accordance with **ASTM C518 : 2015**, report ref. **U-058**.

AireX –

Panel joint and surface materials

AireX Panels can be used in a range of applications including both loadbearing and non-loadbearing facades, partitions, walls and more.

Depending on the application, various materials will be used to join, plaster, or paint, the surfaces of the AireX Panels.

This guide aims to direct the min. requirements of materials that can be successfully used directly on an AireX panel surface.

Material requirements

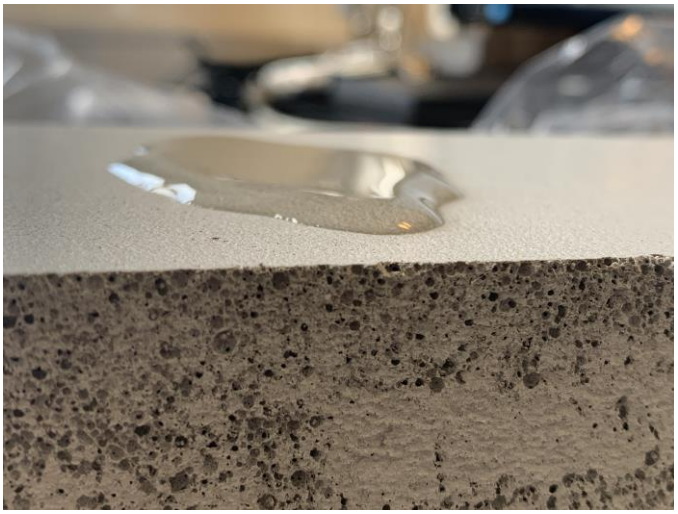
Application	Materials used	Consistency	Compressive strength	Flexural strength
Joints, binding mortar between AireX panels and between AireX panels and other building parts	Cement water Optional, plasticizers, retarders, sand < 0,6mm	Wet, coherent, easy to distribute	Min. 10 MPa	Non-specific, will benefit from fibers
Plastering of panel surface and facades	Cement and sand-based plasters, can contain texturizing materials	Semi-dry, easy to distribute	Non-specific	Should always be fiber reinforced using PP, fiberglass etc.

AireX –

Panel joint and surface materials

AireX Panels can be treated directly with paints and coatings for esthetic and performance related issues.

With the right treatment AireX Panels can become water, acid and dust repellent, making them usable in outdoor as well as industrial and agricultural environments.



Recommended Surface treatments of AireX Panels

Application	Materials used	Number of layers
Internal walls, residential, commercial or non-critical environments.	Traditional concrete or plaster primers and paints might be used, Abeo's CrystalCure primer. Is advisable.	Primer (1) + Paint (2-3 layers), total layers: 3-4
Water and sun exposed with no subsequent plastering.	Facade primers and paints/membranes, Abeo's CrystalCure can be used as primer and final coating on top of paint.	Primer (1) + Paint (2-3 layers) + optional top coating (1), total layers: 3-5
Industrial and agricultural application, water, dust and acid exposure.	Abeo's CrystalCure concentrated solution + optional paint.	CrystalCure (1-2) + optional paint 2-3 layers + top coating (1-2), total layers: 2-6

AireX Panel Production Porcess

Form 1 Production flow 2X castings/day

Process	Hour of day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Demolding							■	■											■	■					
Clean & Oil								■	■											■	■				
Closing form + topcover										■												■			
Casting										■												■			
Curing	■	■	■	■	■					■	■	■	■	■	■	■	■	■					■	■	■