

White Paper

Public Spaces

**Acoustic Treatment
Guidelines**
Airports

V/COUSTIC
INNOVATIVE ACOUSTIC SOLUTIONS

Credits

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White Paper

Public Spaces

**Acoustic Treatment
Guidelines**

Airports

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Intro- duction

The anxiety of loosing a flight

Loosing a flight is likely to be the main concern that travelers' have when in an airport, and is likely to be a cause of anxiety and stress to many people.

Therefore, **in order to minimize this anxiety and make all travelers more confident, airports should provide all relevant flight information in a clear and perceptible way.**

For this, several new ways to communicate information to travelers are nowadays being used in airports, for e.g. electronic screens, mobile apps, etc. Nevertheless, audible announcements through Public Address systems (PA systems) are still likely the preferred way to communicate the most relevant information to travelers. For example, when a gate changes or even if a security risk is happening in a specific section of an airport, this is normally communicated via an airport's PA system.

Consequently, achieving high speech intelligibility of an airport's PA system is considered extremely important. This is even more relevant if we think that a considerable number of travelers are likely to be foreigners and/or non-English natives, i.e. are likely to be people that will have to understand the message in a foreign language. For travelers with hearing impairments, high speech intelligibility of an airport's PA system is even more relevant.



Reducing stress by maximizing speech intelligibility

By maximizing the speech intelligibility of an airport's PA system, i.e. by delivering clear and perceptible messages, traveler's stress levels are likely to reduce, since they will feel more confident that all the relevant information will be correctly perceived and therefore their experience in the airport should become more relaxed and enjoyable.



Which factors compromise an airport's PA system?

In 2017, a research sponsored by The Federal Aviation Administration in the USA¹, made a questionnaire about communications transmitted over PA systems. This questionnaire was delivered to members of the airline industry that had a role in the operation of the airports².

In terms of what negatively affects speech intelligibility, most respondents indicated that:

“(...) high background noise and room acoustics (...)” are “(...) the most important negative factors on speech intelligibility of PA system announcements”.

¹ National Academies of Sciences, Engineering, and Medicine 2017. Improving Intelligibility of Airport Terminal Public Address Systems. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24839>.

² The results of this study are considered to have a 10% margin of error to achieve a 90% confidence level for a population of about 400 airports and 100 airlines.

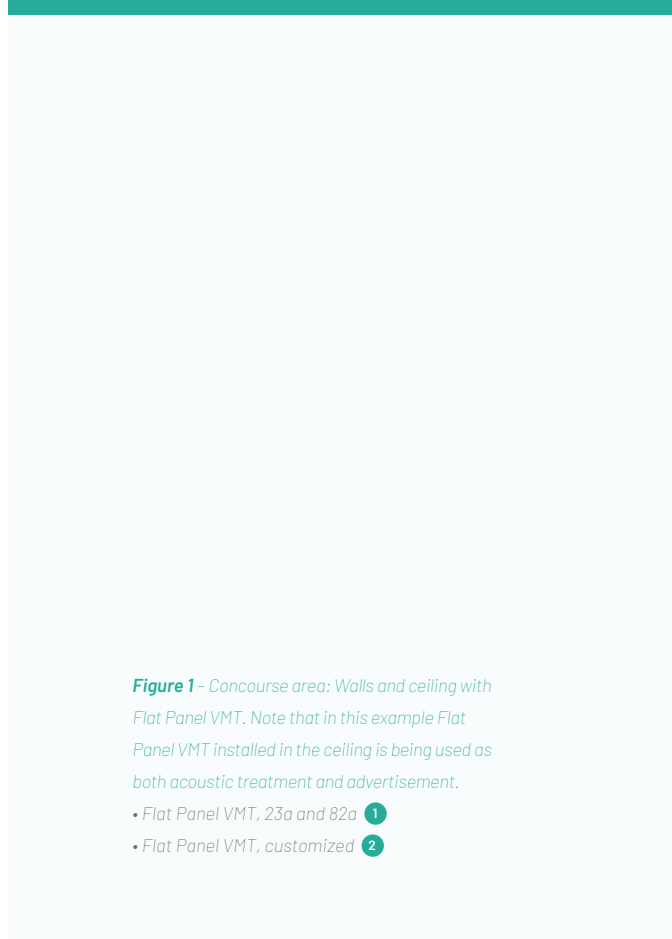


Figure 1 - Concourse area: Walls and ceiling with Flat Panel VMT. Note that in this example Flat Panel VMT installed in the ceiling is being used as both acoustic treatment and advertisement.

- Flat Panel VMT, 23a and 82a **1**
- Flat Panel VMT, customized **2**



Which airport areas are more relevant for acoustics?

According to the same research¹, gate areas and concourses are considered the areas where improvement on an airport's PA system intelligibility should preferentially occur.

No wonder that these were the areas that received most votes since these are the "(...) places where passengers are most anxious about announcements related to boarding, delays, upgrades, and so forth"¹.



How to increase speech intelligibility of airport's PA systems?

As seen previously, high background noise and room acoustics are considered the most negative factors on speech intelligibility of an airport's PA system announcements.

These two factors are related, i.e. in an uncontrolled room, high background noise levels will occur and then, vice versa, **in a controlled room, background noise levels will also be controlled and minimized.**

So let's start to see why airports are so loud.



Why do airports have high background noise?

Typically, airports have very hard reflective surfaces, such as glass, concrete and plasterboard. Therefore, they are normally not acoustically treated leading to acoustic issues.

In such environments, sound is strongly reflected many times around a room's surfaces taking a long time before it is finally absorbed.

This leads to very reverberant rooms and in such spaces, background noise created by multiple people talking, making noise, etc., will quickly build up, making it very hard for people to understand each other.

Consequently, people in such loud environments need to raise their voices above background noise levels to be able to understand each other, thus increasing background noise.

This build-up of sound, also known as the Lombard effect, causes discomfort to everyone, and ends up compromising speech intelligibility of an airport's PA system since its messages will end up being masked by the airport's high background noise.

Reducing background noise

The key point to take into account when designing the acoustics of an airport is to absorb the maximum amount of the, often huge, acoustic energy generated by all travelers and workers in the room. This will both enhance the control of noise build-up and speech intelligibility from the airport's PA system.

Best Practice Guidelines state maximum RTs of 1,5 s in all of an airport's relevant areas, namely in gate areas and the concourses¹.

Acoustic Treatment Location

Ideally, acoustic treatment should be located evenly by all of a room's surfaces (walls and ceiling). This will help to create a more homogeneous acoustic environment and will control any strong, specular reflections from all surfaces.

However, due to project constraints, for the most part, this is not feasible. In these situations, one should look for the best possible compromise. Ceiling treatment is usually preferential, since it is ordinarily the biggest surface available for acoustic treatment and it covers all of the airport's area.

Figure 2

- Flat Panel VMT, 87a and 40a **1**
- Flat Panel VMT, 40a **2**
- Flat Panel VMT, customized **3**

VMT Line

Recommended products



Flat Panel VMT

For wall installation or T-Bar systems, Flat Panel VMT may just be the ideal solution for an airport.

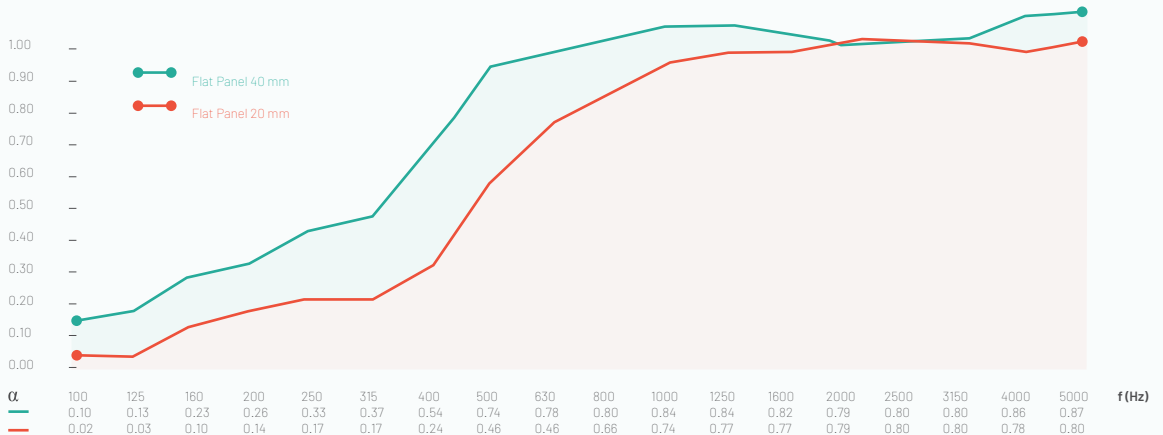
Flat Panel VMT is a sound absorbing panel, extremely efficient in middle and high frequencies, where speech occurs, making it ideal for spaces where great concentrations of people are expected such as in airports.



Figure 3

- Flat Panel VMT, Natural Stones Collection, Travertino Classico 1
- Flat Panel VMT, 87a and customized 2

Performance



These results are from Flat Panel VMT directly over rigid surface and that in other installations such as in T-Grid from its performance is enhanced.

ViCloud VMT Flat and 3D

ViClouds VMT are extremely efficient suspended elements that can be used to control the room's reverberation and any strong sound reflections from the ceiling.

ViClouds VMT are a simple and lightweight suspended acoustic solution that is ideal for spaces, where there is a great concentration of people and where background noise, created by a room full of conversations, can quickly build up.

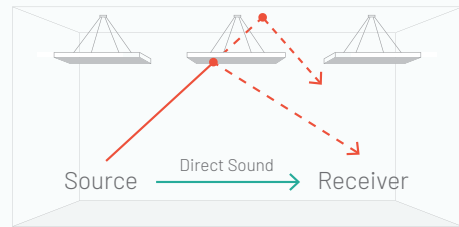


Figure 4

As ViClouds VMT are suspended, these acoustic elements have twice the area of absorbing material exposed to noise than other common acoustic panels, making them an extremely effective solution (as shown in **Figure 4**).



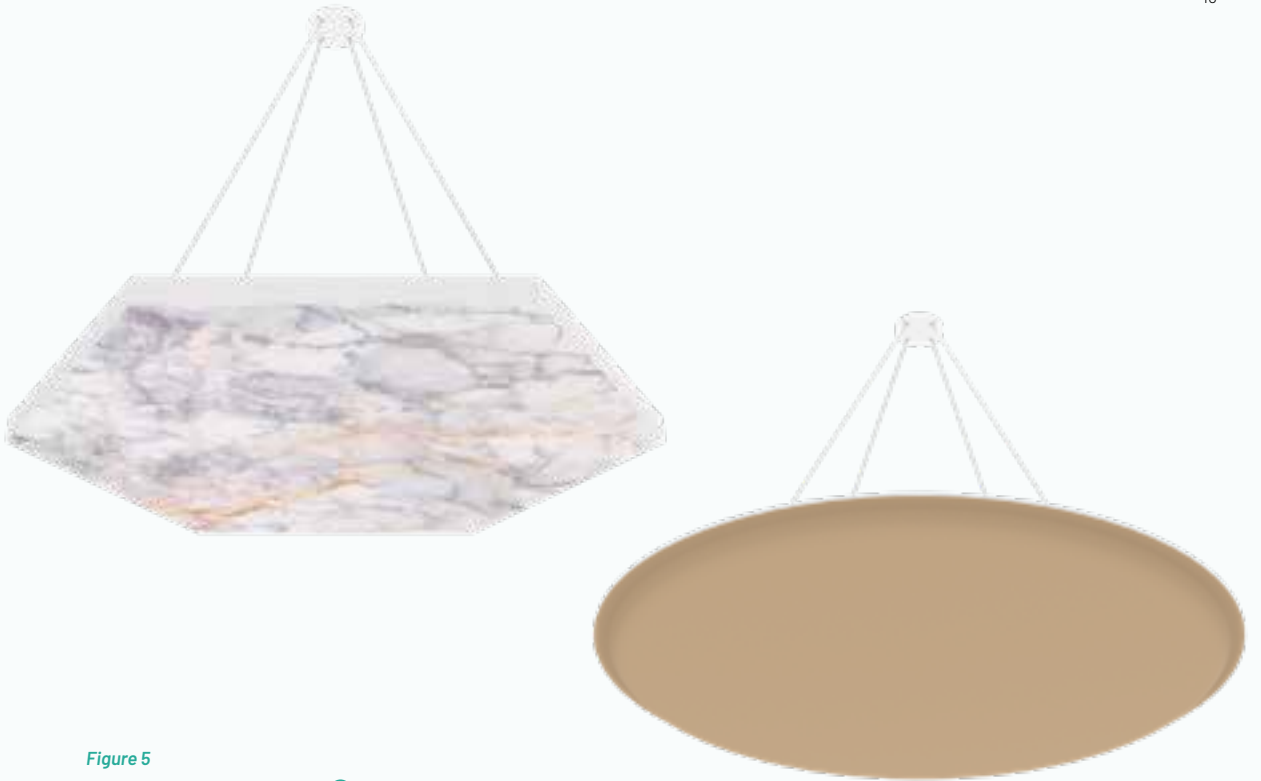
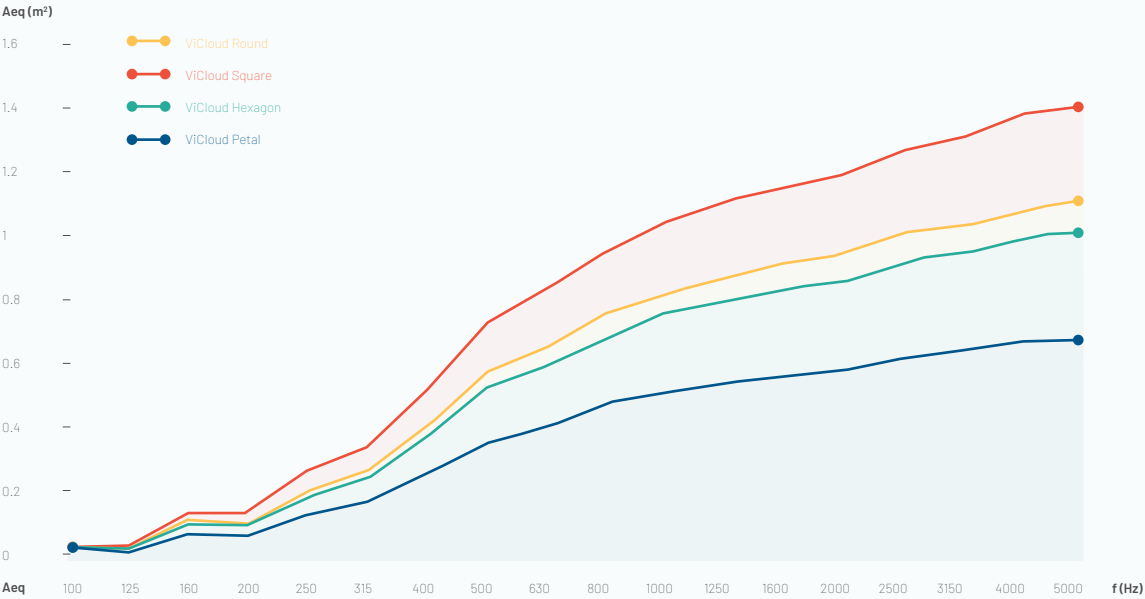


Figure 5

- ViCloud Flat VMT, Square, 82a 1
- Flat Panel VMT, Tiles Collection, Pattern 3, customized 2
- Flat Panel VMT, Natural Stones Collection, Grey Stone Pattern 3

Performance

1m from soffit



VMT Virtual Material Technology



VMT stands for Virtual Material Technology. These are panels developed exclusively by Vicoustic using an innovative dyeing technology.

You can simulate concrete, marble, wood and other materials, achieving a realistic look in any setting with the added benefit of having the acoustics controlled.

VMT products are available in a wide range of standard patterns or may be customized with any art-work one may want.

Figure 6

• Flat Panel VMT, Natural Stones Collection, Invisible Grey Pattern ①



Figure 7

• Flat Panel VMT, customized 1

1

Flat Panel VMT with a natural stone look

Contrary to real stone, Flat Panel VMT is a lightweight panel making it possible to have a natural stone look (like marble) in the ceiling and walls, **with the advantage of reducing the space reverberation.**

2

Flat Panel VMT as airport advertisement

The versatility of VMT allows it to be used for advertisement. This use means that part of **the acoustic treatment of the airport could be supported by third parties.**



Figure 8

- Flat Panel VMT, Concrete Collection, Pattern 2 **1**
- Flat Panel VMT, Customized Exit sign **2**
- Flat Panel VMT, Customized Advertisement **3**

3

Flat Panel VMT to improve airport's signalization

Flat Panel VMT can be used to identify different areas using color codes and signs. This will help travellers find the right way to specific airport areas. By changing the design, one will be able to create different atmospheres for each area.

This VMT versatility enhances airport communication, making people feel more confident and less stressed, while addressing airport acoustics.



4

Flat Panel VMT as a decorative element

The **figure 9** presents Flat Panel VMT installed in the balcony of an airport lounge. This is an extremely efficient solution to control background noise, since the absorbing element in this case is being installed very close to the source of noise (people seated in an airport lounge).

You may have a balcony that looks like marble but does not "sound" like it!



Figure 9

- ViCloud Flat VMT, Square, 82a **1**
- Flat Panel VMT, Tiles Collection, Pattern 3, customized **2**
- Flat Panel VMT, Natural Stones Collection, Grey Stone Pattern **3**

5

ViCloud VMT enhances acoustic performance and interior design

Just as Flat Panel VMT, ViCloud VMT can have different finishes, be **used as an advertisement support or identify different airport areas**. These acoustic clouds have twice the area of absorbing material exposed to noise, because they are a suspended element.

This makes them not only a stylish solution as well as an extremely effective sound absorber.

Installing VMT Products is so easy, that you don't need to close your airport for the installation.

Figure 10

- ViCloud 3D VMT, Natural Stones Collection, Calacatta Carrara 1
- Flat Panel VMT, Nature Collection, Pattern 3 customized 2

Installation

Installing VMT Products is so easy that you don't need to close your airport for the installation. The installation can be done overnight, which avoids disrupting the airport's business.

In terms of installation, **Flat Panel VMT** is compatible with T-Bar systems or can simply be glued or applied using Velcro to any surface.

ViCloud Flat VMT and ViCloud 3D VMT come with their own mechanical/magnetic fixation system and can be fixed with a screw or using its magnet if installed onto a metal surface. The magnet works on most of the T-Bar systems making installation very easy - when the T-Bar is not strong enough to sustain ViCloud VMT, we advise the use of a metal accessory compatible with T-Frames.



Safety

Contrary to standard products available in the market, VMT products are lightweight, meaning that there is no risk if they fall due to any natural disaster like an earthquake, etc.

Fire Rate

All VMT Products mentioned in this White Paper are Euro Class B fire rated.



Sustainability (Air Quality and Eco-Friendly)

Instead of using commonplace raw materials, the latest **Vicoustic VMT line of products uses new and responsible raw materials that are predominantly made of recycled PET Bottles (60%)**, which are recyclable and low emitting materials (low VOC emissions).

Alongside being made of eco-friendly materials, these products maintain all necessary fire safety regulations and are classified as Class 1 according to OEKO-TEX 100 Standard, i.e. meeting the human-ecological requirements presently established for baby articles.

In addition, the ink that Vicoustic uses for the VMT technology is OEKO-Tex Eco Passport certified, i.e. it also emits very low VOC, enhancing Vicoustic commitment in the development of ecological and sustainable acoustic solutions.



Thermal Insulation

VMT is also an extremely efficient thermal insulator. This will help control - and hopefully reduce - an airports HVAC electrical bill.

VMT Thermal Properties

- VMT 40mm: Lambda-10: 37.12 mW/(m*K);
R-10: 1.1449 m2K/W; TC: 0.1922 mW/(m*k2)W
- VMT 20mm: Lambda-10: 34.37 mW/(m*K);
R-10: 0.6197 m2K/W; TC: 0.1558 mW/(m*k2)W

Maintenance

All VMT Products can be easily cleaned with water.

They can be removed and cleaned under running water or directly by using a wet wipe.

Please note: Do not use products or cleaning methods with temperatures above 80° C since these may damage the panels.

Water Resistance

An added value of VMT products is that water is not an issue for them. Given that they are predominantly made of recycled PET Bottles, these panels are water resistant and washable.

In this way, one will not face the common water mold problem that many acoustic panels available in the market have.

Even the perforated metal ceilings have issues with water, becoming rust after some time.

Figure 11 and 12 - Common acoustic panels end up having humidity issues (picture from Paris Orlis). VMT technology will avoid this problem and ensure that panels retain their look.



Figure 13 - Metallic perforated acoustic panels may become rust after some time (picture from Dubai's Airport), an issue that VMT technology can avoid, by ensuring the same look overtime.



Figure 14 - The same ceiling as it would look like using VMT technology, in this case using United Arab Emirates' Flag colors to cover the surface.

Quantities Needed

The table below presents minimum quantities recommended by Best Practice Guidelines depending on an airport's space volume.

The values presented are based on a room's dimensions and consider standard airports finishes for floors, walls and ceilings. You can use these values as a guideline and scale them according to your room's size.

For more complex rooms or if you need help with your project please contact Vicoustic's Team.

Figure 15

- Flat Panel VMT, 87a and 116a 1
- Flat Panel VMT, Customized 2



Volume (m ³)	Flat Panel VMT 20 mm	Flat Panel VMT 40 mm
	Nominal Treated Surface Area to Achieve Target RT < 1.5 s (%)	
30	24	18
50	22	17
80	21	16
100	21	16
300	18	14
500	17	13
800	16	12
1000	15	12
3000	13	10
5000	12	9
8000	11	8
10000	10	8
30000	7	6

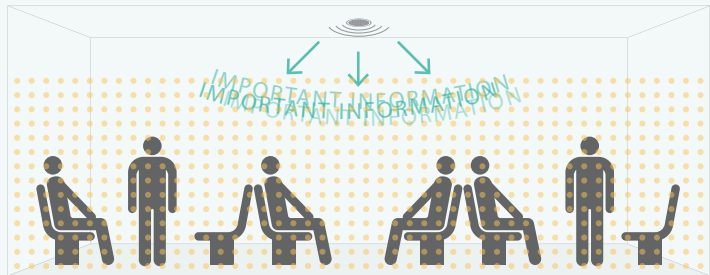
Table 1 - Nominal percentage surface area necessary to achieve RT60 less than 1.5 seconds.

Acoustic Treatment Results

The illustrations below portray a PA message (“Important information”) being transmitted in an untreated and a treated gate area.

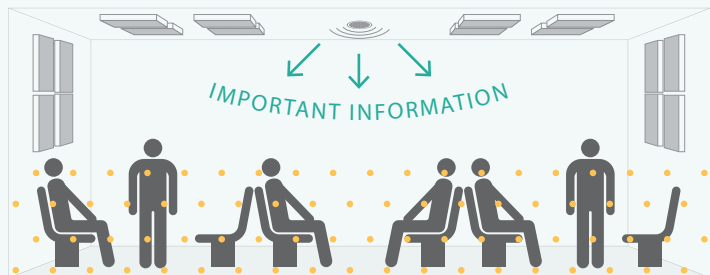
Untreated gate area

The message is being blurred by excessive gate reverberation and masked by noise from people in the gate, compromising speech intelligibility.



Treated gate area

Reverberation in the gate area and noise build-up are both being controlled. This way, speech intelligibility is maximized and the message can be clearly perceived.

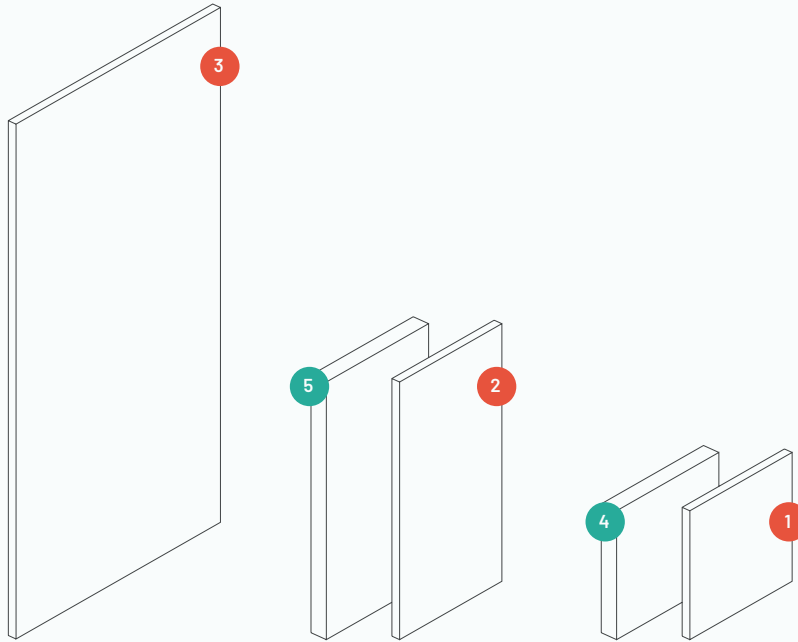


→ Direct Sound

●●● Background noise

Product Information

Flat Panel VMT



Dimensions*

- 1 595 x 595 x 20 mm / 23.4" x 23.4" x 0.8"
- 2 1190 x 595 x 20 mm / 46.8" x 23.4" x 0.8"
- 3 2380 x 1190 x 20 mm / 93.7" x 46.8" x 0.8"
- 4 595 x 595 x 40 mm / 46.8" x 23.4" x 1.6"
- 5 1190 x 595 x 40 mm / 23.4" x 46.8" x 1.6"

Package Information

- 1 2 3 8 units/box
- 4 5 8 units/box

Box Dimensions

- 1 665 x 675 x 195 mm / 26.2" x 26.6" x 7.8"
- 2 1260 x 675 x 190 mm / 49.6" x 26.6" x 7.5"
- 3 2470 x 1275 x 170 mm / 97.2" x 50.2" x 6.7"
- 4 665 x 675 x 355 mm / 26.2" x 26.6" x 14"
- 5 1260 x 675 x 355 mm / 49.6" x 26.6" x 14"

* Please notice that the dimensions of this panel have a tolerance of +/- 2 mm

** Flat Panel VMT 20 mm

Features

- Light weight
- Easy to Install
- Easy to clean and maintain
- High Performance in medium and high frequencies

Technical Information

Raw Material

VicPET Wool

Fire Rate**

Europe: Euroclass B -s2, d0
 USA: Class A (ASTM-E84)
 Canada: CAN/ULC S102, Flame Spread Rating: 5, Smoke Developed Classification: 115

Installation

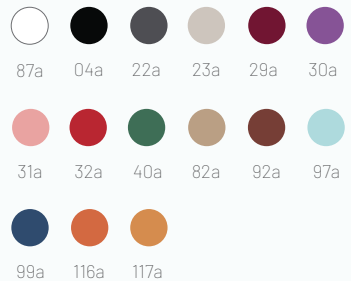
Velcro (included), Flexi Glue Ultra, VicFix Magnetic, VicFix Frame, AluFrame Single, AluFrame Double

Available Finishes

Collections

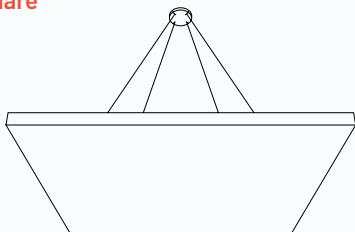
- Natural Stones NEW
- 3D
- Brick
- Concrete
- Doodle
- Floral
- Geometric
- Nature
- Tiles
- World

Solid colors

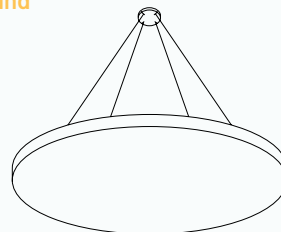


ViCloud Flat VMT

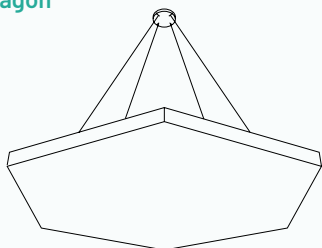
1 Square



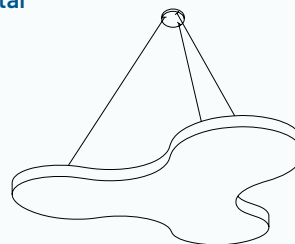
3 Round



2 Hexagon



4 Petal



Dimensions*

1 1160 x 1160 x 40 mm / 45.7" x 45.7" x 1.6"

3 Ø 1160 x 40 mm / Ø 45.7" x 1.6"

*Please notice that the dimensions of this panel have a tolerance of +/- 2 mm

2 1160 x 1005 x 40 mm / 45.7" x 39.6" x 1.6"

4 1160 x 1068 x 40 mm / 45.7" x 42" x 1.6"

Package Information

4 units/box

Box Dimensions

1267 x 1267 x 170 mm / 49.9" x 49.7" x 6.7"

Features

- Premium high density VicPET Wool
- High Performance in medium and high frequencies
- Light weight
- Easy to install
- Easy to clean and maintain

Technical Information

Raw Material

VicPET Wool

Accessories

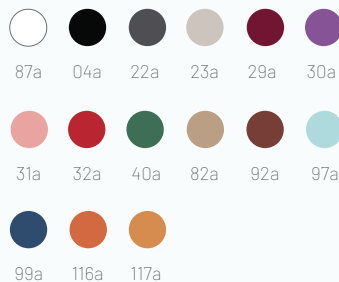
Magnetic and Mechanical Suspended Fixation (Included)

Available Finishes

Collections

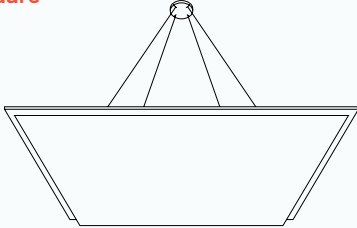
- Natural Stones NEW
- Concrete
- Doodle
- Floral
- Geometric
- Nature
- World

Solid colors

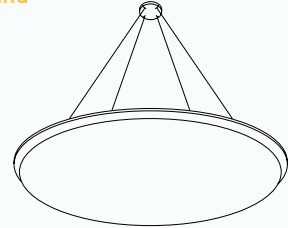


ViCloud 3D VMT

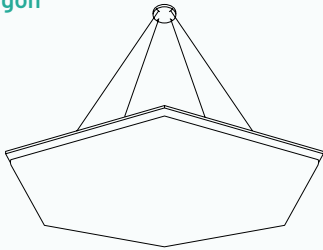
1 Square



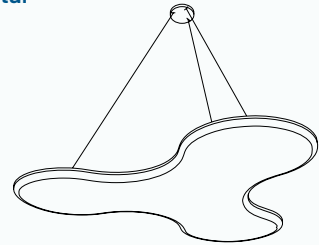
3 Round



2 Hexagon



4 Petal



Dimensions*

1 1160 x 1160 x 40 mm / 45.7" x 45.7" x 1.6"

2 1160 x 1005 x 40 mm / 45.7" x 39.6" x 1.6"

3 Ø 1160 x 40 mm / Ø 45.7" x 1.6"

4 1160 x 1068 x 40 mm / 45.7" x 42" x 1.6"

*Please notice that the dimensions of this panel have a tolerance of +/- 2 mm

Package Information

4 units/box

Box Dimensions

1015 x 1015 x 195 mm / 40"x40"x 7.7"

Box Gross Weight

8,5 kg

Features

- Premium high density PET Wool
- High Performance in medium and high frequencies
- Light weight
- Easy to install
- Easy to clean and maintain

Technical Information

Raw Material

VicPET Wool

Fire Rate

Euro Class B S1, d0 (EM 13501-1)

Accessories

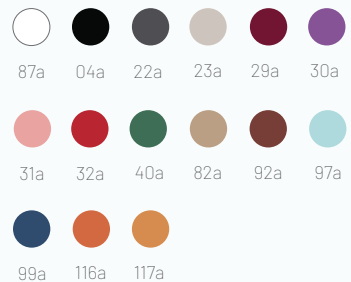
Mechanical and Magnetic Suspended Fixation (included)

Available Finishes

Collections

- Natural Stones **NEW**
- Concrete
- Doodle
- Floral
- Geometric
- Nature
- World

Solid colors



VMT Collections

Natural Stones Collection

**Calacatta
Carrara**



**Emperador
Dark**



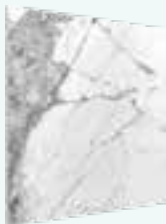
**Fusion
Wow**



**Grey
Stone**



**Invisible
Grey**



**Travertino
Classico**





Tiles

Collection

1



2



3



4

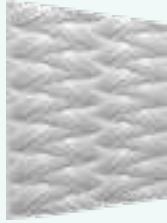


3D Collection

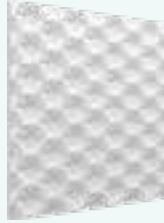
1



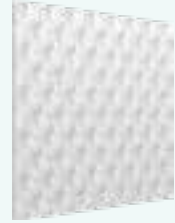
2



3



4



Brick Collection

1



2



3



4



Concrete Collection

1



2



3



4



Doodle Collection

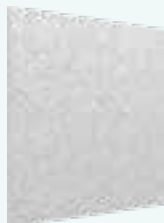
1



2



3



4



Floral Collection

①



③



④



Geometric Collection

①



②



③



④



Nature Collection

①



②



③



World Collection

①



②



③



④



Glossary

dB (decibel) – The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the root mean-square pressure of the sound field and reference pressure (2×10^{-5} Pa).

Direct Sound – Sound that arrives at the listener's position directly from the sound source, i.e. without being reflected from any objects or surface.

First Reflections – Usually defined as the sound reflections that reach the listening position up to approximately 20ms after the direct sound.

Lombard Effect – Psychoacoustic Effect named after the French otolaryngologist Étienne Lombard observed and reported that people with normal hearing raised their voice when subject to noise.

Reverberation – An acoustical phenomenon that occurs in enclosed spaces, when sound persists in that space as a result of repeated reflection or scattering from surfaces enclosing the space or objects within it.

Reverberation Time (s) – A measure of the degree of reverberation in a space. It is equal to the time required for the level of a steady sound to decay by 60 dB after it has been turned off.

Sound Absorption – The portion of the sound energy that is absorbed and not returned when a sound wave hits a surface.

Sound Reflection – The portion of the sound energy that is returned when a sound wave hits a surface.

Speech Privacy – It is the inability of an unintentional listener to understand another person's conversation. Lack of Speech privacy is frequently related with acoustic dissatisfaction within offices – e.g. overhearing unwanted conversations, or feeling overheard.

Vicoustic Provides innovative acoustic solutions

Vicoustic is a company in constant evolution with strong international expression, represented in more than 80 countries

Vicoustic understands sound – and we know what makes a truly exceptional acoustic and audio experience. Being at the forefront of acoustic technology, we combine engineered systems with stunning design to bring you sound that is free of compromises, but full of high quality performance.

A leading force in the industry, founded in 2007, Vicoustic is found in over 80 countries around the world. We understand the unique sound dynamics of a room or venue. So whether it's a Home Cinema, Hi-Fi room to a professional sound system for radio and television, our expertise for peak acoustic performance is second-to-none.

The products from Vicoustic deliver clever and innovative solutions to meet the demands of spaces which require a sophisticated soundscape. Taking on board the high standards of our customers, we continuously strive to manufacture products of superior functionality, adaptability, but all the while with a sustainable and environmentally conscious mind-set.

Quality at the heart of sound

Vicoustic is concerned with design, leading technology and sound solutions. And alongside this vision, our work is always underpinned by producing sound with materials and systems of the highest quality. We listen to our customers and take on board their acoustic needs, what we do is very personal. We are proud of our work and Vicoustic would never create something that we wouldn't use ourselves. Designed and manufactured in Portugal, our facilities underwent great transformation in 2015 to incorporate state of the art equipment and new production and coating systems. This ensured that Vicoustic was able to maintain the high quality standards expected of its products, increase production volumes, but also create those bespoke products for our custom projects. This is led by our own 'in-house' Quality Department, who oversee all aspects of quality from the company. The ability of Vicoustic to create individually designed items at a premium quality means that our products can meet the needs of most spaces (no matter how unusual) to ensure the best acoustics and environment to enjoy sound...we have it covered.

Vicooustic Team

From conception through to completion, we work closely with architects, engineers and designers to deliver a project successfully irrespective of complexity.

Our project team includes senior acoustic engineers and designers that are experts in taking you on your acoustic and design needs.

The pioneering hardware and software tools we have engineered have proved to be very reliable to support the integration of acoustic treatment and sound insulation solutions through a new-build or a refurbishing project.

Our Research and Development Team is also available to develop customized products to satisfy your needs.

Our customers will also be supported by our Sales, Marketing and Logistics teams to assist with transportation, communication and all information that may be required: pricing; installation guides; catalogues; etc.



Together we have proven that we can provide high levels of value to see our customers through the whole process of installing acoustic solutions.

This includes reliable and effective recommendations of products and support services throughout your whole project process from conception through to completion.



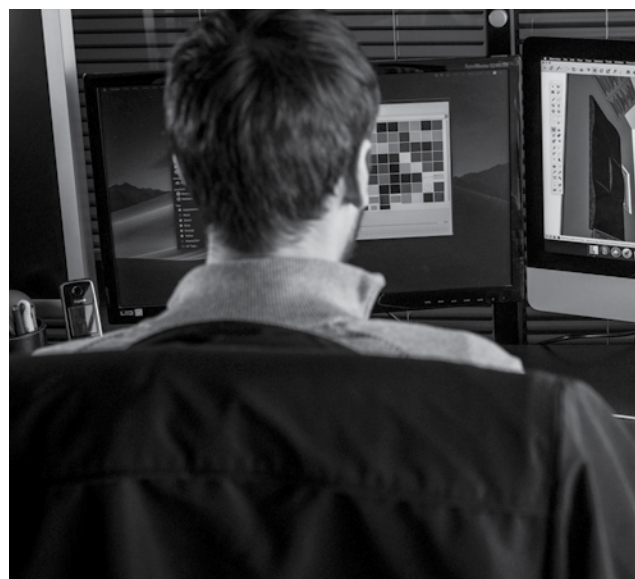
We do

- Custom Designed Products
- Room Design Recommendations
- Technical Support

Technology and rigorous in-house testing are the foundations for every Vicoustic Product

This is what makes Vicoustic a distinguished brand and leader in its sector

We believe that Vicoustic should constantly be paving the way, innovating and driving sound technologies to ensure that we are not only leading the field, but producing the best acoustics in every space we are acoustically curating. What makes us outliers in the industry is our 'Vicoustic Research Centre', inaugurated in 2012 alongside the Vicoustic HQ. We pride ourselves on developing and continuously advancing our technologies and ways of working to deliver the best product to our customers.



The Research Centre operates on a multidisciplinary platform: the 'Multifunctional Room' and the 'Innovative Acoustic Chamber'. We have a brilliant (and fun!) time using this centre to test our products and investigate and challenge the way we use audio and acoustic technologies.



The 'Multifunctional Room', lined with magnetic walls, allows us to assemble, mount and test different combinations of acoustic products quickly and efficiently. Not only does this allow us to analyse performance, quality and design, it also gives us the opportunity to share this learning with our Vicoustic partners across the world

The 'Innovative Acoustic Chamber' is a world leading testing facility. 4-ton

mechanical walls allow us to adapt the size of the space to the bespoke requirements of our customer. With a specialized sound insulation system, we can develop product and test resonance, sound frequency and, best of all, curate that beautiful acoustic ambiance only made possible by emulating the space the system will eventually call home. The sound behaviour is captured using B&K microphones and each element of the acoustic can then be identified and tested so nothing is missed and everything can be fine-tuned.

Our aim is to invest in programmes to optimise acoustic performance within specific architecture and interior spaces. This means we can produce aesthetically pleasing products, whilst also upholding key safety and environmental regulations.

Vicoustic Sustainability Approach

In the past decade, Vicoustic has been developing a strong concern in terms of creating new sustainable acoustic solutions

We are committed to making products in an environmentally friendly way. This is important to Vicoustic and an integral part of our product development. Following an extensive project looking into the sustainability of our creations, a substantial part of our products are now made using recycled or recyclable materials.

Most notably, Vicoustic has increased the use of VicPET Wool. A non-woven textile with superb acoustic performance, but predominantly made from recycled plastic bottles. 2018 sees a 3rd Vicoustic factory opening, meaning we are more determined than ever to use eco-friendly products in our lines.

But sustainability is not limited to manufacturing. Our aim for a greener product is also in the quality and durability of our creations and we aim for these to have a great, long and lasting life.



Vicoustic's continuing research and innovation in acoustic solutions, in its pursuit of new materials, led to the development of VicPET Wool

Instead of using commonplace raw materials, the latest Vicoustic line of products uses new and responsible raw materials that are predominantly made of recycled PET Bottles (65%), which are recyclable and low emitting materials (low VOC emissions).

Alongside being made of sustainable materials, these products maintain all necessary fire safety regulations and are classified as Class 1 according to OEKO-TEX 100 Standard, i.e. meeting the human-ecological requirements presently established for baby articles.

We, at Vicoustic, are doing all this in an innovative way, without compromising the acoustic performance or the design and quality of our products. Installing our new line of products not only will ensure you meet your acoustic needs, but can also promote the sustainable ambitions of your company and helps you earn the credits normally available in the Green Building Certification Schemes such as LEED (USA); WELL (UK); HQE (France); etc.



VicPET Wool

Properties

- Does not irritate skin or eyes
- Recyclable (100% PET)
- Good indoor air quality - zero emission of VOC's or formaldehyde
- No chemicals used
- Humidity resistant
- No dust generation during handling
- Class I acc. to Oeko-Tex 100 Standard

Description

- Non-woven product
- 100% polyester fibres
- Thermally bonded
- Colour: White or Black

Other features

- **Flammability:** Euroclass B, s1 d0
- **Thickness (range):** 20 to 80 mm
- **Weight:** 800 to 1600 grams/m²





Production

Strategically located in the largest industrial cluster in Portugal



Packaging

Each individual panel is inspected, placed in plastic casing and boxed. Production and Logistic enhancements guarantee high quality control and fast expedition



Shipping

Vicoustic Acoustic Solutions are currently being shipped over 80 different countries worldwide



Installation

"Out of the box" solutions, easy to install

R&D and Logistics Facility

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