

White Paper

Hi-Fi & Home Cinema

**Acoustic Treatment
Guidelines
Cinema Rooms**

Credits

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White Paper

Hi-Fi & Home Cinema

**Acoustic Treatment
Guidelines**
Cinema Rooms



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Goal

The goal in a Cinema Room or a Home Theatre acoustic design is to provide the audience a neutral acoustic environment, in order to assure them a clear and complete film audio experience without introducing any acoustic distortions that could compromise its perception.

In other words, the home cinema listener should be able to clearly hear what the film Director intended with minimum influence from external sources such as:

- **Room's acoustics;**
- **Noise from mechanical sources** (e.g. cinema's HVAC systems);
- **Noise from sources located in theatre's adjacent spaces.** Furthermore, the noise generated within the cinema room should not be a source of nuisance to potential noise sensitive receptors located nearby.

To achieve this, there are mainly **three areas where the acoustic design of a Home Cinema should act on:**

1

Designing internal acoustic treatment in order to control the Cinema's reverberation time and avoid acoustic defects, such as echoes, flutter echoes, room resonances, etc;

2

Limiting internal background noise levels by controlling noise from mechanical sources, such as HVAC;

3

Improving sound insulation between the home cinema and adjacent spaces.

In this White Paper, Vicoustic will guide you through the acoustic treatment of your Home Cinema.

Cinema Rooms

Acoustic treatment guidelines

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Home Cinema **Basic Acoustic Treatment Steps**

In order to achieve a neutral acoustic environment within the home cinema, there are three main areas where internal acoustic treatment should act on

Step 1

Reverberation Time Optimization

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Step 2

Early Reflections

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Step 3

Sound Field Anomalies

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Step 1 Reverberation Time Optimization



Picture from: Showroom Bang & Olufsen in Paseo Mallorca St. Espacio Schar, Espacio Home Design Group

Usually, the design of a home cinema will require a significant amount of acoustic absorbing panels.

There are several guidance providing RT criteria for cinema rooms. Typically, criterion calls for very short reverberation times. Depending on the room's volume, basic mid-frequency RT values (at 500 Hz) are recommended to be within 0,2 s to 0,6 s.



There are also recommendations for RT changes with frequency, typically lengthening RT at low frequencies and shortening RT at high frequencies.

A reasonable effort should be made to achieve these recommended values, since high RT values may result in detriment of the sound information being transmitted and, consequently, reducing speech intelligibility whenever dialog is present in the material being reproduced and, as we know, dialogues are of major importance in most films.

Step 2

Early Reflections

Early reflections should also be properly treated. As already mentioned, the goal is for the listener to be able to feel the ambiance and reverb contained in the film audio track. In addition, the listener should be able to clearly distinguish sound sources and locate them in the sound field. Therefore, the sound should reach the listener's ears with very few reflections and remain "uncolored" by the room itself.

It is recommended to treat first reflections with sound absorbing panels, as these will take energy from those early reflections and improve sound clarity and source localization within the room. It should be noted that, late reflections do not present the same issues mentioned for early reflections. These late reflections might even be helpful in avoiding the room from becoming too "dead", as long as these are properly controlled and do not have too much energy.

Nevertheless, specular reflections should be avoided and, therefore, it is recommended to treat these late reflections with sound diffusing panels, which will spread their energy by the room and help to create a sense of spaciousness inside.



As a rule of thumb, we should treat reflections in the following ways:



①

Surfaces near the loudspeakers should be deadened, i.e. should be controlled using sound absorbing panels;

②

Other surfaces **should provide good diffusion**;

③

Specular reflections should be avoided.

Step 3

Sound Field Anomalies

It is common to encounter Cinema Rooms and Home Theatres with moderately small dimensions.

Such rooms are prone to have sound field anomalies related to **room modes** and **flutter echoes**.



Room modes

Room modes are set-up in small rooms due to the relationship between low frequency wavelengths and room dimensions.

These modes can cause audible effects in the room's sound field at low frequencies, by originating areas with minimum pressure levels and areas with maximum pressure levels that can vary as much as 15 dB. Naturally, this will affect the listener's correct perception of sound at low frequencies.

Furthermore, modern home cinemas are increasingly considering the use of subwoofers in order to reproduce the low frequency content of the film audio tracks. The placement of the subwoofers and the listening positions will determine how the room modes are excited and heard by the listeners, affecting the perception of the material being reproduced. It is therefore crucial to also include some acoustic treatment to control low frequencies (Bass Traps) within the Cinema Room.



Flutter echoes

Flutter echoes are caused by repeated sound reflections caused by sound waves traveling between parallel reflective surfaces, such as side walls, back and front walls, floor and ceiling.

This compromises the correct sound signal perception and, therefore, it should be properly addressed in critical listening spaces.

The best way to control flutter echoes is to evenly distribute acoustic treatment by the room, not leaving any parallel surfaces untreated.

Solutions

In this White Paper, **two distinct solutions are presented for the acoustic treatment** of your Cinema Room:

1

The VMT XXL Solution, based on Vicoustic's new Flat Panel VMT XXL panels. This solution is suitable for clients who are looking to get a continuous appearance throughout all room's walls.

2

The Ultra Family Solution, based on Vicoustic's new Ultra acoustic panels, namely, the Cinema Round Ultra VMT and Cinema Round Ultra Fuser. This solution is suitable for clients who are looking for a modular solution for their room.



Both solutions follow the basic acoustic treatment steps presented previously in this White Paper. **The main differences between them are in terms of design.** Acoustically, the RTs of both solutions are likely to be within optimum values defined in best practice guidelines.

It should be noted that these solutions are meant for standard cinema rooms (rectangular rooms between 15 m² to 50 m² and room height between 2,4 and 3 m).

This document is **based on best practice guidelines and recommendations** (such as Dolby, CEDIA, ITU-R, etc.). **The recommended acoustic treatment is applicable not only for stereo sound reproduction, but also for multichannel configurations.**

As previously stated, this document presents **general guidelines for acoustic treatment only**. Sound insulation, noise control or more complex situations may require special attention and advice (for further assistance request a Project to Vicoustic's Team of Acousticians and Designers).

1

The VMT XXL Solution

This solution is aimed for clients who are looking for a continuous look throughout all room's walls.



Front wall view

Figure 1/2

- Flat Panel VMT XXL 1
- Cinema Round Premium 2
- Multifuser DC2 3
- Multifuser Wood MKII 64 4



Back wall view

2

The Ultra Family Solution

This solution is aimed for clients who are looking for a modular solution for their room.



Front wall view

Figure 3/4

- Cinema Round Ultra VMT 1
- Cinema Round Ultra Fuser 2
- VicTotem Ultra VMT 3
- Flexi Wave Ultra 4



Back wall view

**How do these
solutions
deal** with
the room
acoustics?

Step 1

Reverberation Time Optimization

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Step 2

Early Reflections

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Step 3

Sound Field Anomalies

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Step 1 Reverberation Time Optimization

In both solutions, RT is being optimized throughout all frequency spectrum.

The table below presents the products used in each of the solutions. This RT optimization will maximize speech intelligibility.

Solution
VML XXL
Ultra Family

These predicted values are meant to be used as a guidance to understand the benefit of the acoustic treatment that is being proposed. It should be noted that, if smaller rooms are considered, the RT is likely to have lower values than the ones presented in the images. If different finishes are considered the RT may increase or decrease depending on the sound absorption coefficients of these finishes.

The image presents the calculated RT for both proposed solutions.*

** For these RT calculations, we considered a 5 m(W)x 8 m(L)x 3 m(H) room, with the following finishes: walls and ceiling made of plasterboard and carpet floor.*

Low Frequencies

Medium and High Frequencies

Super Bass Extreme Ultra VMT
on the corners

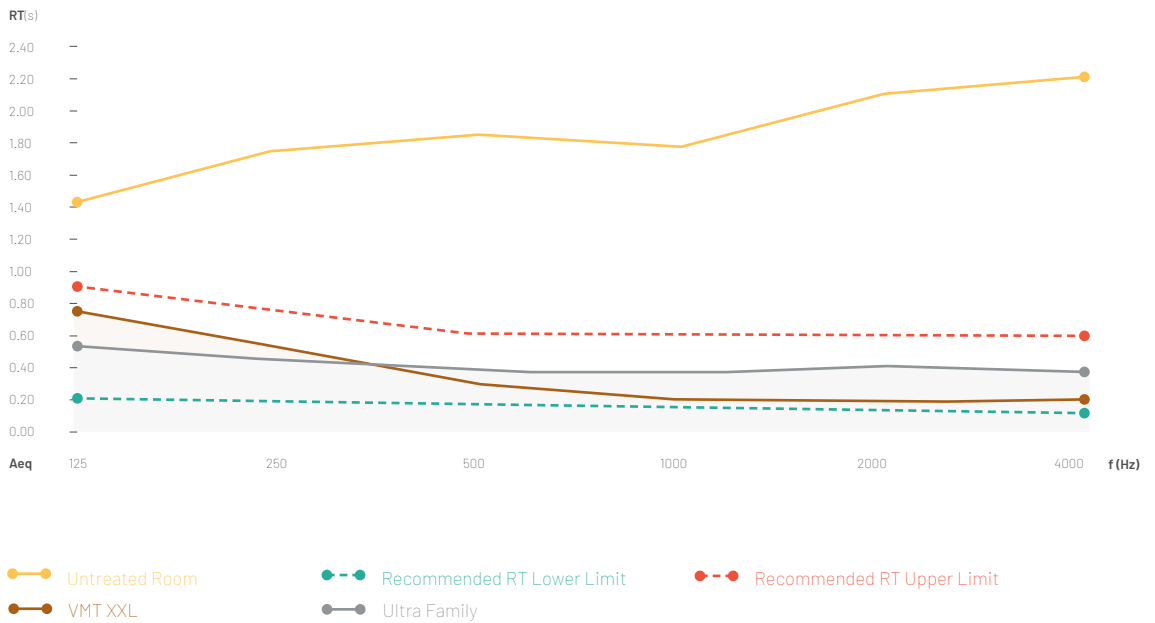
VMT XXL, Cinema Round Premium,
Multifuser Wood MKII 64
and Multifuser DC2
on the walls and ceiling.

VicTotem Ultra VMT
on the corners

VMT XXL, Cinema Round Ultra VMT,
Cinema Round Ultra Fuser
and Flexi Wave Ultra
on the walls and ceiling.

Reverberation Time

RT Prediction VMT XXL and Ultra Family
Acoustic Treatment vs Recommended Values



Step 2

Early Reflections

Early reflections are being treated in both solutions.

In the VMT XXL solution, **Flat Panel VMT XXL panels** are being considered to absorb first reflections.

In the Ultra Family solution, **Cinema Round Ultra VMT** and **Flexi Wave Ultra** are the absorbers chosen for this end.

On the back part of the room, **Multifuser Wood MKII** (VMT XXL solution) or **Cinema Round Ultra Fuser** (Ultra Family solution) are being considered, in order to deal with late specular reflections (from the front speakers) and to prevent the room becoming too “dead”, maintaining, in this way, the reverb tail, providing therefore a sense of spaciousness.



Figure 5

- Cinema Round Premium 1
- Flexi Wave Ultra 2
- Multifuser Wood MKII 64 3



Treating early reflections will **improve sound source localization** - by absorbing reflections originating from the front part of the room - and **improve the sense of spaciousness and envelopment within the room** - by treating reflections arriving from the back part of the room with sound diffusers.

Step 3

Sound Field Anomalies

Low frequencies are being treated using **Super Bass Extreme Ultra VMT** (VMT XXL solution) or by **VicTotem Ultra VMT** (Ultra Family solution). These solutions will control Room Modes making the film's low frequency content clearer throughout all audience.

Both bass traps work as membrane absorbers, i.e. both act with pressure, and therefore should be located on room corners where sound pressure is maximum.

Flutter Echoes are being avoided by spreading the acoustic treatment evenly throughout all room surfaces and by avoiding having untreated parallel surfaces.



Figure 6

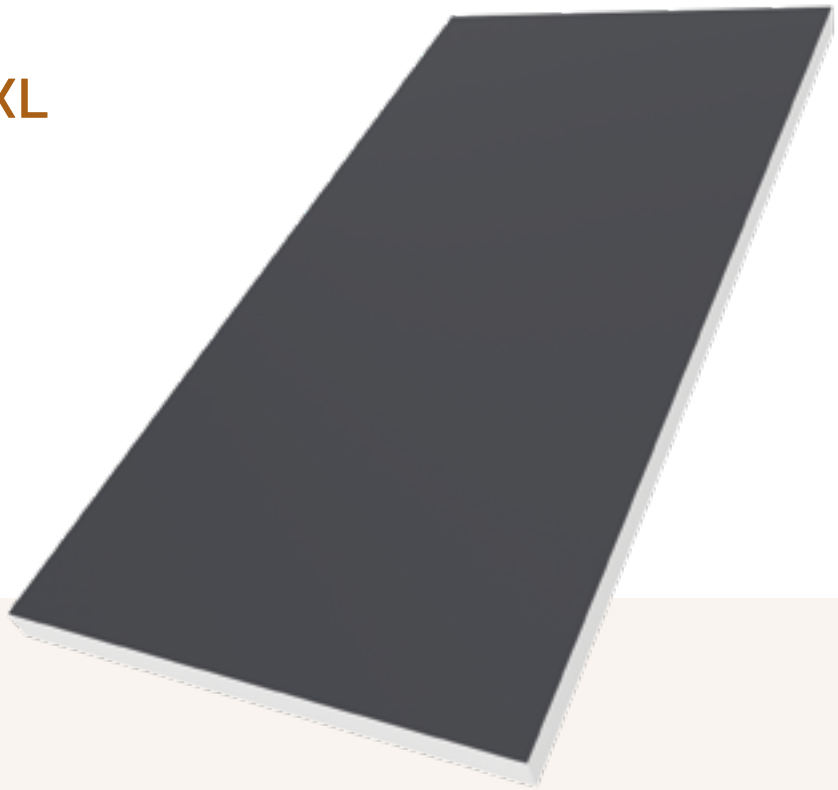
- Flexi Wave Ultra 1
- VicTotem Ultra VMT 2
- Multifuser Wood MKII.36 3



List of materials needed



Products included in the **VMT XXL** solution



Flat Panel VMT XXL

Flat Panel VMT XXL takes all the benefits from standard VMT panels with the plus of having Extra Large dimensions. This will provide a solution that will cover most of the walls' surfaces, meaning that, with a minimum quantity of panels one will be able to treat the whole room - achieving in this way a continuous design. By using VMT technology, one will be able to choose the final artwork the panel will have, tuning both acoustics and design of your room - having natural stones, wood, art-deco, or any other particular design is made possible by this technology.

Imagination is the limit for how the final look of your room will be. In the solution proposed in this White Paper, VMT XXL is being installed using Vicoustic's Aluframe fixation system. This frame solution adds a 10 mm air gap between the panels and the structural wall, allowing space for passing cables, etc. This air gap is also used to improve the panel's absorption performance in the medium-low frequency range.

VMT Panels can also be bought in smaller sizes to customize the size and space allocated to your environment.

Figure 7

- Flat Panel VMT XXL with AluFrame VMT T **1**
- Cinema Round Premium **2**
- Super Bass Extreme Ultra **3**



Cinema Round Premium

Cinema Round Premium is one of the most iconic Vicoustic panels. It has been used in several Home Cinemas, Studios, etc. and it is known for its aesthetics and its flat absorption performance between 250 Hz and 5k Hz - maintaining, in this way, the spectral content of the original sound signal.



Figure 8

- Cinema Round Premium **1**
- Multifuser Wood MKII 36 **2**

Multifuser DC2

Multifuser DC2 Despite being an economical Diffuser, the Multifuser DC2 has a great performance. It performs on mid and high frequencies, brightening and clarifying sound.



Multifuser Wood MKII 64

Multifuser Wood MKII 64 is one of Vicoustic's Premium diffusers. Made of natural wood, it is a perfect 2D QRD Diffuser for your Home Theatre, with both great performance and design.

Products included in the **Ultra Family solution**



Cinema Round Ultra VMT

A luxury new acoustic absorber, that combines high acoustic performance with the latest VMT technology, for the most demanding clients. This new Vicoustic absorber, inspired by our best-seller Cinema Round Premium, has 15 standard VMT colors and eight different wood colors.



Cinema Round Ultra Fuser

A stylish unidirectional diffuser, mixing the best features from our awarded products Polywood Fuser, Cinema Round Premium and VicTotem.





VicTotem

Ultra VMT

This product is a variable bass trap, allowing you to tune it according to your needs. You can vary its low frequency performance from as low 80 Hz to 200 Hz, by changing the side facing the room (from the wood side to the VMT side) or having any intermediate situation.



Flexi Wave

Ultra

This product embodies form and function on a hybrid acoustic panel, combining diffusion and absorption in a luxury acoustic product like no other.

Quantities Needed

The solutions presented in this White Paper were developed for a room with 5 m(W) x 8 m(L) x 3 m(H), with the following finishes: walls and ceiling made of plasterboard and carpet floor.

The quantities presented below refer to this example.

If the dimensions of your room differ considerably from this example, **you can use the quantities presented below as a baseline and adapt them to your scenario.** As a rule of thumb, to determine how many panels your room should have, divide your room's volume by the volume of the room in the example, and multiply the result by the quantities of panels mentioned below.



The VMT XXL Solution

Products	Quantities (un)
Flat Panel VMT XXL	48
Multifuser Wood MKII 64	24
Super Bass Extreme Ultra VMT	16
Cinema Round Premium	24
Multifuser DC2	12



Figure 9

- Multifuser DC2 **1**
- Flexi Wave Ultra **2**
- Cinema Round Premium **3**
- Super Bass Extreme Ultra **4**

If the finishes of your room differ considerably from the finishes used in this examples, in case you have more reflective finishes than the ones mentioned, as a rule of thumb consider using more absorption elements where space is available.

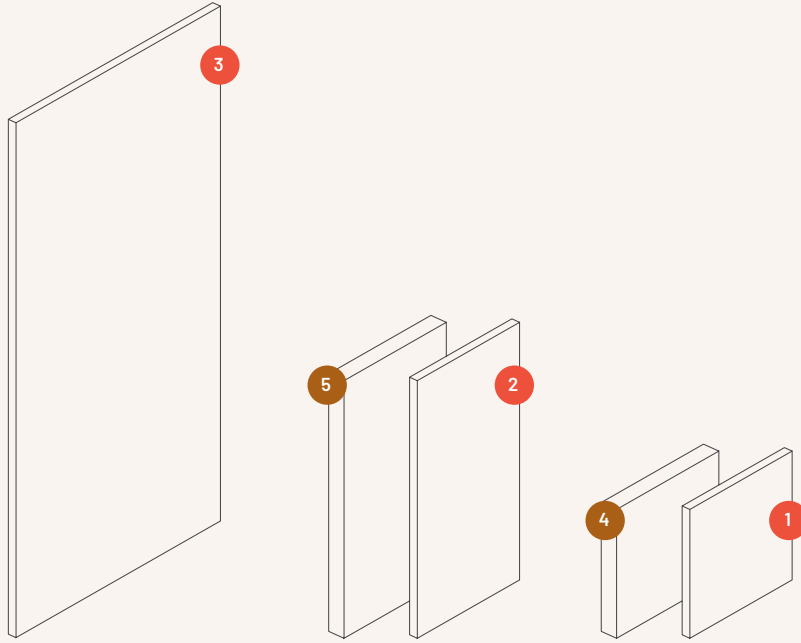
On the contrary, **if you have finishes that are more absorptive than the ones mentioned in the example, consider using less absorbing materials and replace them by diffusers.**

For further help please contact:
sales@vicoustic.com

The Ultra Family Solution

Products	Quantities
Cinema Round Ultra VMT	53
Cinema Round Ultra Fuser	34
Flexi Wave Ultra 60	24
Flexi Wave Ultra 120	24
Flat Panel VMT XXL	10
VicTotem Ultra VMT	4

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 / 46.8" x 23.4" 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

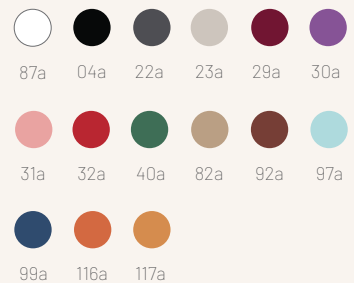
Velcro (included), Flexi Glue Ultra, VicFix Magnetic, VicFix Frame, AluFrame Single, AluFrame Double

Available Finishes

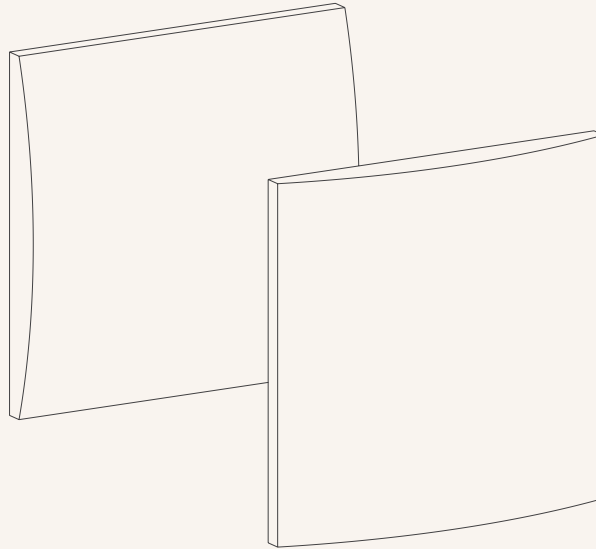
Collections

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

Solid Colors



Cinema Round Premium



Dimensions*

595 x 595 x 75 mm

Package Information

8 unit/box

Box Dimensions

630 x 630 x 620 mm

Box m³ 0,05

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

Applications

- Listening Rooms
- Home Theaters
- Recording and Broadcast Studios
- Post Production Studios
- Performance Spaces
- Rehearsal Rooms
- Conference and Teleconference Rooms
- Public Spaces
- Auditoriums, etc.

Technical Information

Raw Material

Melamine Resin Foam and Fabric

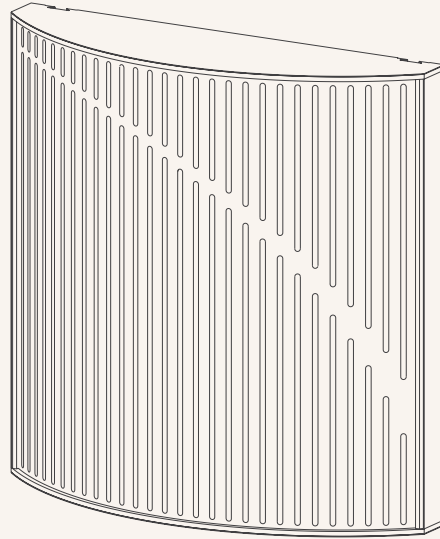
Installation

Flexi Glue Ultra, VicFix Base

Fabric Colors



Cinema Round Ultra VMT



Dimensions*

595 x 595 x 170 mm / 23.4" x 23.4" x 6.7"

Package Information

2 unit/box

Box Dimensions

675 x 675 x 400 mm / 26.6" x 26.6" x 15.7"

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

Applications

- Listening Rooms
- Home Theaters
- Recording and Broadcast Studios
- Post Production Studios
- Performance Spaces
- Rehearsal Rooms
- Conference and Teleconference Rooms
- Public Spaces
- Auditoriums, etc.

Technical Information

Material

MDF, Melamine and VicPet Wool

Fire Rate

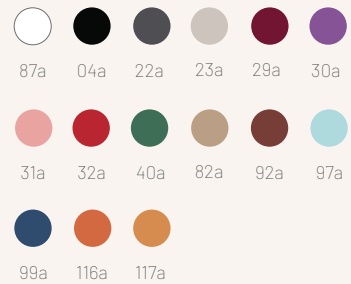
TBA

Installation

VicFix J Profile (included)

Available Finishes

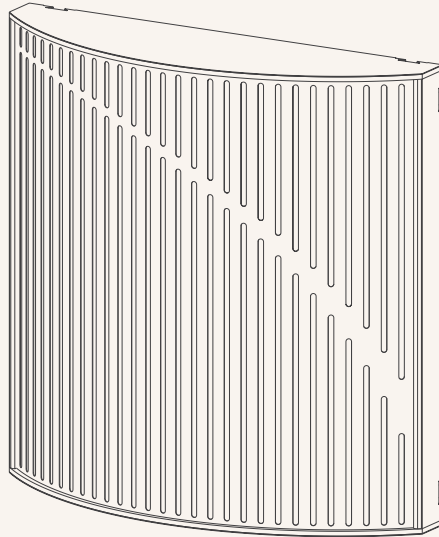
Solid Colors



Wood Colors



Cinema Round Ultra Fuser



Dimensions*

595 x 595 x 170 mm / 23.4" x 23.4" x 6.7"

Package Information

2 unit/box

Box Dimensions

675 x 675 x 400 mm / 26.6" x 26.6" x 15.7"

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

Features

- Unidirectional diffuser,
- Solid construction
- High quality MDF with anti-scratch melamine
- PET absorption inside
- Professional fixation system

Technical Information

Material

VicPet Wool, MDF and Melamine

Fire Rate

TBA

Installation

VicFix J Profile (included)

Wood Colors



White Mate
W1000PM



Black Mate
U999PM



Dark Wenge
H1116



Brown Oak
H1399



Locarno Cherry
H1636



Natural Oak
H3395

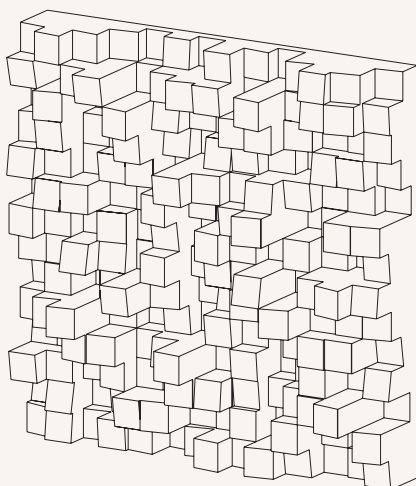


Metallic Copper
F570



Metallic Gold
F571

Multifuser DC2



Dimensions*

595 x 595 x 147 mm / 23.4" x 23.4" x 5.8"

Package Information

6 unit/box

Box Dimensions

710 x 615 x 615 mm / 28" x 24.2" x 24.2"

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

Applications

- Listening Rooms
- Home Theaters
- Recording and Broadcast Studios
- Post Production Studios
- Performance Spaces
- Rehearsal Rooms
- Conference and Teleconference Rooms
- Public Spaces
- Auditoriums, etc.

Colors



White



Black



Grey

Technical Information

Material

Polystyrene

Fire Rate

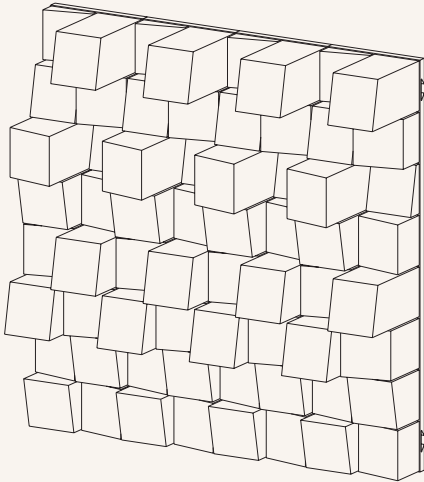
Europe: Euroclass F

Installation

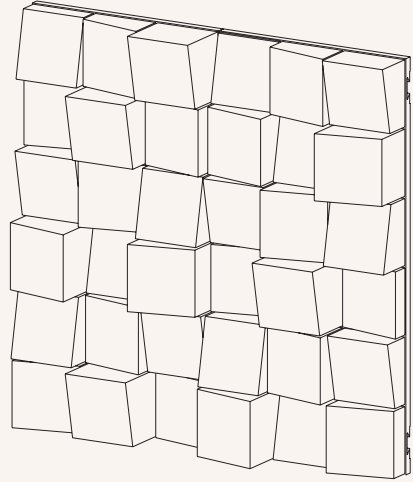
Flexi Glue Ultra + Mechanical
Suspension

Multifuser Wood MKII

1 64



2 36



Dimensions*

1 595 x 595 x 135 mm / 23.4" x 23.4" x 5.3"

2 595 x 595 x 75 mm / 23.4" x 23.4" x 2.9"

Package Information

1 unit/box

Box Dimensions

1 625 x 330 x 190 mm / 24.6" x 13" x 7.5"

2 625 x 330 x 140 mm / 24.6" x 13" x 5.5"

Box Gross Weight

1 18.2kg / 40.2lb

2 13.2kg / 29.1lb

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

Applications

- Listening Rooms
- Home Theaters
- Recording and Broadcast Studios
- Post Production Studios
- Office
- Rehearsal Rooms
- Conference and Teleconference Rooms
- Public Spaces
- Auditoriums
- And many more

Technical Information

Raw Material

Wood

Installation

VicFix J profile (included), Flexi Glue Ultra

Fire Rate

Europe: Euroclass E

USA: Class B (ASTM-E84)

Wood Colors



VicTotem Ultra VMT

Dimensions*

1845 x 595 x 366 mm / 72.6" x 23.4" x 14.4"

Package Information

1 unit / 4 boxes (3 modules + 1 base)

Box Dimensions

3 boxes: 665 x 675 x 355 mm / 26.2" x 26.8" x 13.9"

1 box: 805 x 405 x 60 mm / 31.7" x 15.9" x 2.4"

** For each panel. Please notice that the dimensions of these panels have a tolerance of +/- 2 mm*

Technical Information

Material

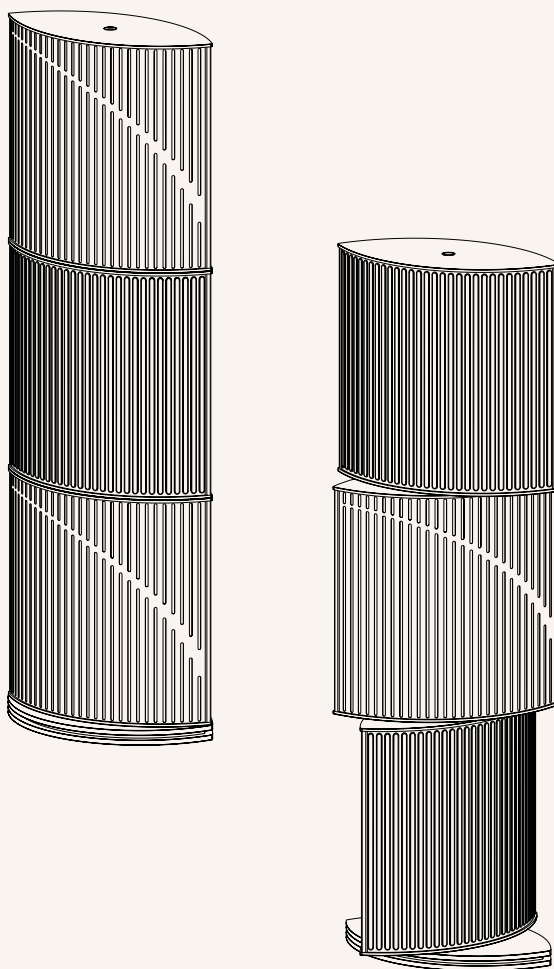
PET Wool, MDF, Melamine

Fire Rate

N/A

Installation

Manually assembled
- no tools required

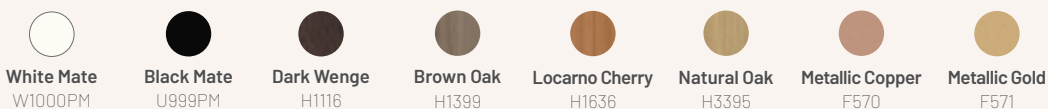


Available Finishes

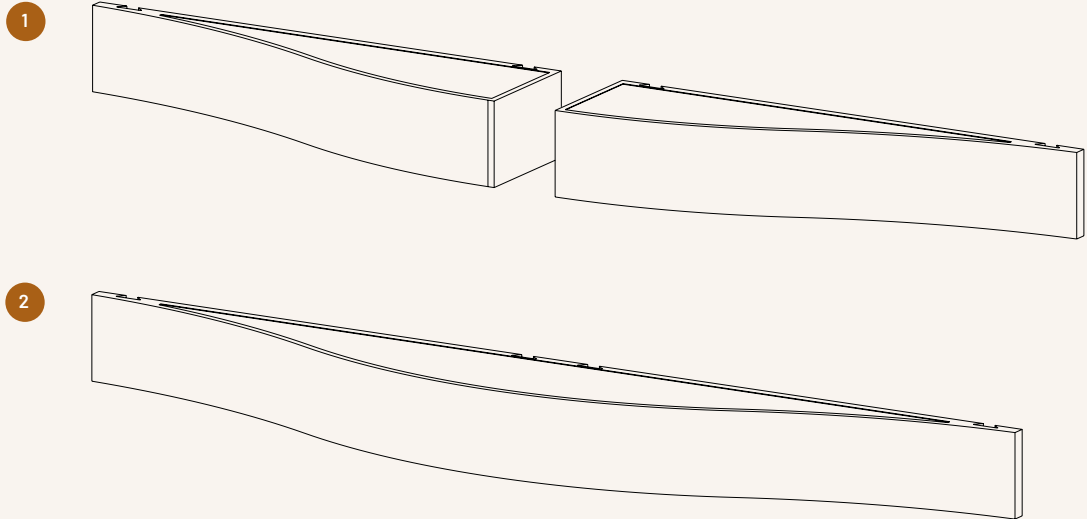
Solid Colors



Wood Colors



Flexi Wave Ultra



Dimensions*

- 1 595 x 100 x 150 mm / 23.4" x 3.9" x 5.9"
- 2 1195 x 100 x 150 mm / 46.8" x 3.9" x 5.9"

Package Information

6 unit/box

Box Dimensions

- 1 605 x 620 x 185 mm / 23.8" x 24.4" x 7.3"
- 2 1220 x 620 x 185 mm / 47" x 24.4" x 7.3"

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

Features

- Acoustic absorption and diffusion on a single panel
- Polyurethane free
- VMT technology
- High quality MDF with anti-scratch melamine
- PET absorption inside
- Professional fixation system
- Anti-allergenic
- VOCs free
- Customizable side

Technical Information

Raw Material

VicPet Wool, MDF and Melamine

Installation

VicFix J Profile, Flexi Glue Ultra

Fire Rate

Europe: TBA

Wood Colors



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

Flutter Echoes – Repeated sound reflections caused by sound waves travelling between parallel reflective surfaces such as walls.

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.

Room Modes – At specific frequencies, called room resonance frequencies, standing waves are created within rooms. These frequencies depend on the dimensions and shape of the room. This group of resonance frequencies are normally referred to as room modes. When a sound source generates sound with frequencies equal or close to the room resonance frequencies, the room response will be enhanced and patterns of maximum pressure levels and minimum pressure levels will be produced. The shape of these patterns differs with the room resonance frequency.

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

Sound Diffusion – Sound diffusion occurs when a sound wave hits a complex surface such as a diffuser and its energy is distributed in many directions.

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

Standing Waves – A standing wave is originated from the interaction of two sound waves with equal frequency and amplitude but travelling in opposite directions. Unlike the travelling waves, the standing waves do not cause a net transport of energy, since the two waves that form it are carrying equal energy in opposite directions. The resulting standing wave alternates between maximum and zero amplitude.

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.

Vicoustic 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.

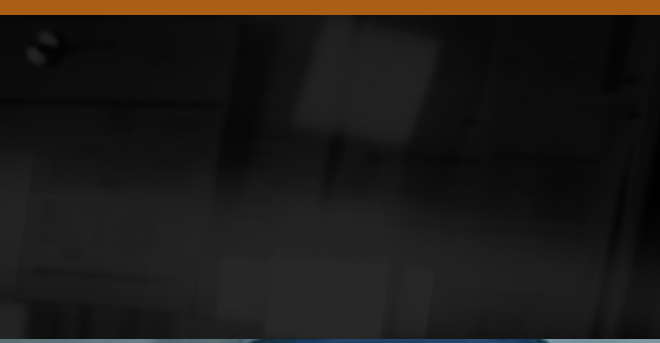
Our Research and Development Team is also available to develop customized products to satisfy your needs.

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.



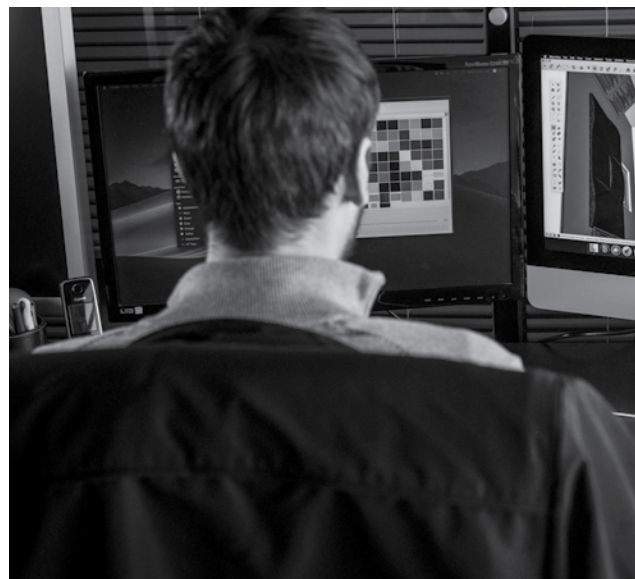
We do

- 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
- Color: 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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