



Ecotone

Akoustics



Once noise is controlled, balance of happiness is limitless
High performance sound insulation that will prevent all
noise both from indoor and outdoor for limitless of
happiness and privacy in extremely using your voice

MicroFiber[®]
GOLDEN WOOL



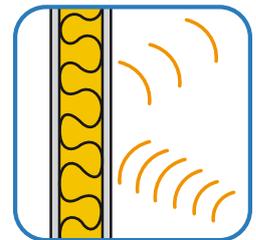
How good will it be if you could enjoy your music and movie at night from your powerful audio, to dance or to sing with your family in a significant day like family day or worry free from your neighborhood and other noise from outside to allow you enjoy your happiness in playing your favorites music after dinner.

Sound insulation

The most important thing in improving indoor sound quality are to control the original sources of sound itself to ensure noise controlled both indoor and outdoor. Thus, factor to reduce noise are as following;

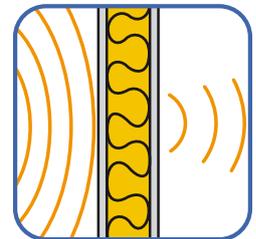
Sound absorption

This to transform the sound energy to other such as thermal energy, this will allow noise once contact with huge small cavitation and porous material like fiber insulation, it will absorb the noise and reduce the sound reflection very well.



Sound insulation

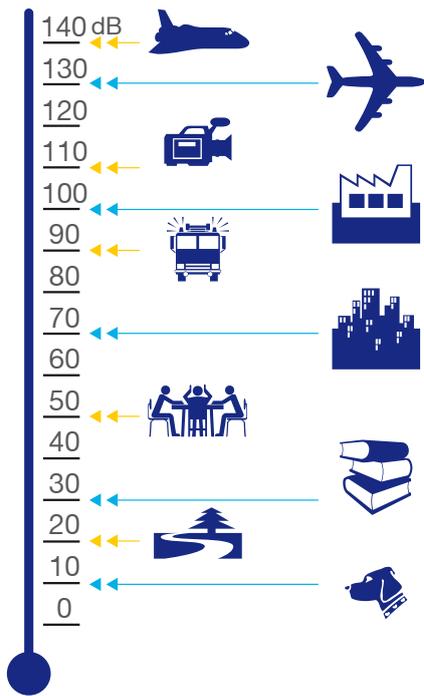
This to reduce sound energy that flow from one room to another by using acoustic material that has characters of porous with huge cavitation like fiber insulation inside the wall, it then helps absorb and loss sound energy when sound wave come into contact with an absorbent material.



Unpleasant Sound

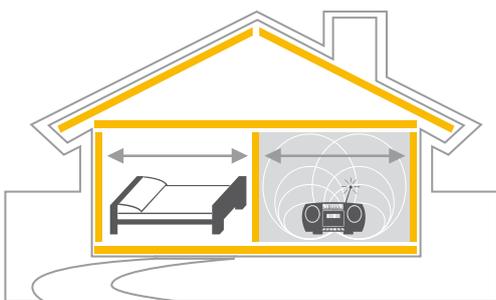
Weather the noise from machine, horn, loud music next door or from airplane all these will causing you stress, insomnia, and your quality of life drop all over the places. Then noise controlling is essential to suit and fit with life spending and places such as bedroom, office room, cinema and others.

The picture shows a comparison of sound levels from different sources and environments.



| Noise Criteria (NC) | |
|-----------------------|-------------------|
| Room Type | Volume Level (dB) |
| Sound studio | 15 - 20 |
| Theater | 25 - 30 |
| Bedroom | 25 - 35 |
| Hospital | 30 - 35 |
| Workroom | 30 - 35 |
| Classroom and library | 30 - 50 |
| Cinema | 30 - 35 |
| General office | 35 - 40 |
| Banquet Hall | 35 - 45 |
| Gymnasium | 35 - 50 |
| Kitchen | 40 - 50 |
| Machinery room | 40 - 50 |

MicroTone is the fiber insulation that contain plenty of cavitation among the fiber itself that performs sound absorption from one side to the other, yet help reduce the reverberation which suitable for bedroom, office room, cinema room, musical room and others. With the properties of this sound absorption both inside and outside, it helps improve quality of your life and family more.



“House model that installed sound absorption **MicroTone** to block the noise transmit between room”

How to use MicroTone

MicroTone for walls is using in absorb sound between room such as bedroom, kid room, tv room and kitchen.

MicroTone for ceiling is meant for ceiling installation inside to prevent such unpleasant sound like airplane, raining above from sound absorption it yet help absorb heat from rooftop.

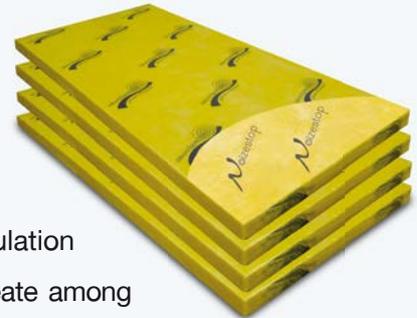
MicroTone for floor apply on the floor to prevent such noise from toilet on the second floor down to first floor.

Sound insulation

Acoustic insulation

MicroTone Model Noizestop

 Noizestop model is the acoustic insulation sheet covered by high quality of moisture and vapor resistance embed from factory. The insulation itself has high density prompt with property of open cell structure permeate among the insulation, this help reduce the reverberation time and fit with all kind of walls that required noise control from one room to another.

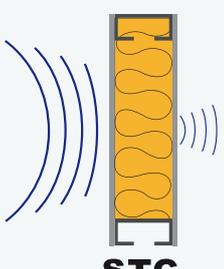


How to use

 Noizestop model is the acoustic insulation that produced and designed to apply with all kinds of wall such as gypsum wall, cement fiber wall, smart board wall, brick wall, precast wall, wood wall and others which help prevent sound wave transmit from one room to another. It suits well with bedroom, office room, meeting room, music room, home theater, karaoke room, recording room, music rehearsal room.



Product's details

| | | |
|---|--|--|
|  <p>STC</p> |  |  |
| | <p> Noizestop model using high quality of encapsulation material, endurance well to peering strength, uneasily to peering off, moisture and water resistance.</p> | <p>SM Has moisture resistance SS Has moisture with heat resistance</p> |

*For any special encapsulation material required please direct inquire to the company

| Product | Facing | Density kg/m ³ | Thickness mm. | Size m. x m. | k-value | | R-value | |
|---------------|--------|------------------------------|------------------|-----------------|---------|-----------------------------|---------------------|--------------------------|
| | | | | | W/m.K | Btu.in/ft ² .h.F | m ² .K/W | ft ² .h.F/Btu |
| Noizestop 050 | SM | 32 | 50 | 0.40 x 1.20 | 0.033 | 0.229 | 1.515 | 8.734 |
| Noizestop 075 | or | | 75 | or | 0.033 | 0.229 | 2.272 | 13.100 |
| Noizestop 100 | SS | | 100 | 0.60 x 1.20 | 0.032 | 0.222 | 3.030 | 17.467 |

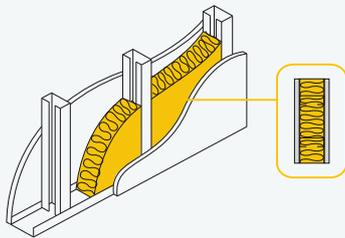
Acoustic for wall insulation

Sound Transmission Class (STC) is the indicator in decibel (dB) to indicated the ability of wall in blocking the noise transmit from one side to another. The more of STC the more of high ability in noise blocking indicated.



model apply with Gypsum wall

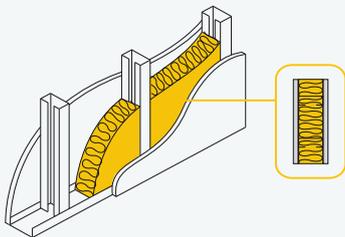
**STC
42**



Gypsum wall has 2 side 1 level with thickness is 12mm. apply with metal frame size C65 and empty the gap with Microtone Noizestop 050 model

model apply with Cement Fiber Wall

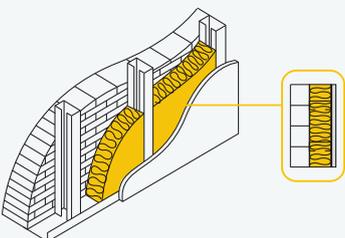
**STC
51**



Cement Fiber Wall has 2sides 1 level with thickness of 12mm. apply with metal frame size C65 and empty gap with Microtone Noisestop 050 model.

model apply with Brick wall

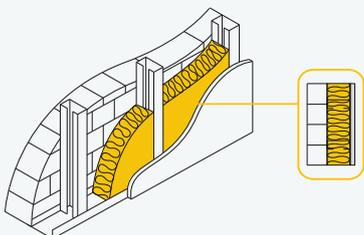
**STC
65**



Brick wall apply plaster 2 sides with thickness 10 cm. apply with metal frame size C65 cover with cement fiber 8 mm. thickness and empty the gap with Microtone Noisestop 050 model.

model apply with Precast wall

**STC
68**



Precast wall to apply plaster with thickness at 10 cm. in 2 sides, apply with metal frame size C65. Closed with cement fiber thickness 8 mm. And empty gap with Microtone Noizestop 050 model

Sound insulation

Sound absorption

MicroTone Model Noizelezz

 Noizelezz is the instant acoustic absorption in sheet encapsulated with special fiber fabric, strengthen, durable, high quality embedded from factory. The insulation itself has a high density, with plenty of cavitation with porous character, it help absorb and reduce the reverberation so it suitable to use with all kinds of wall that required sound absorption.

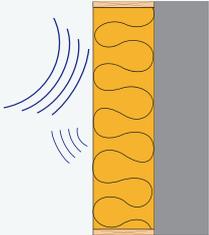


How to use

 Noizelezz is the acoustic absorption sheet that produced and designed to apply with all kinds of wall such as Gypsum wall, Cement fiber wall, smart board wall, Brick wall, precast wall, wood wall and others to absorb the noise reflection and reduce reverberation within the room. It is good for meeting room, Home theater, music room, karaoke room, recording room, music rehearsal room, machine room, gymnasium, and cinema for instance.



Product's details

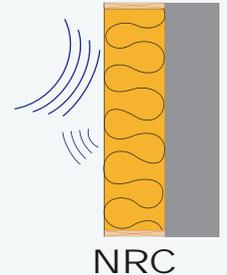
| | |
|--|--|
|  <p>NRC</p> |  |
| <p> Noizelezz is the instant acoustic absorption sheet encapsulated with special fiber fabric which it's high quality, strength durable, available in 2 color white and black including choices of closed skin to choose depending on the designer's requirement.</p> | |

*Special encapsulation please inquire more to company

| Product | Color | Density kg/m ³ | Thickness mm. | Size m. x m. | k-value | | R-value | |
|------------------|-------|------------------------------|------------------|-----------------|---------|-----------------------------|---------------------|--------------------------|
| | | | | | W/m.K | Btu.in/ft ² .h.F | m ² .K/W | ft ² .h.F/Btu |
| Noizelezz W350GC | Black | 32 | 50 | 0.40 x 1.20 | 0.033 | 0.229 | 1.515 | 8.734 |
| Noizelezz W375GC | or | 32 | 75 | or | 0.033 | 0.229 | 2.273 | 13.100 |
| Noizelezz W450GC | White | 48 | 50 | 0.60 x 1.20 | 0.032 | 0.222 | 1.563 | 9.009 |

Sound absorption wall

Noise Reduction Coefficient (NRC) is the figure indicate the insulation's ability in sound absorption. The more the NCR showed in the insulation the more ability of sound absorption and lower resonance has, comparing to the low NRC one.



Noise Reduction Coefficient

| Product Type | Density (kg/m ³) | Thickness (mm.) | Sound Absorption Coefficients, ASTM C423 Octave Band Center Frequencies (Hz) | | | | | | |
|------------------|------------------------------|-----------------|---|------|------|------|------|------|------|
| | | | 125 | 250 | 500 | 1000 | 2000 | 4000 | NRC |
| Noizelezz W350GC | 32 | 50 | 0.27 | 0.73 | 1.16 | 1.13 | 0.98 | 0.84 | 1.00 |
| Noizelezz W375GC | 32 | 75 | 0.50 | 0.98 | 1.26 | 1.11 | 0.98 | 0.86 | 1.10 |
| Noizelezz W450GC | 48 | 50 | 0.17 | 0.86 | 0.97 | 0.96 | 0.93 | 0.95 | 0.95 |

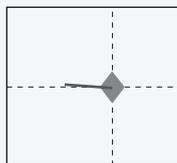
*Test results for fiberglass insulation only.

Installation

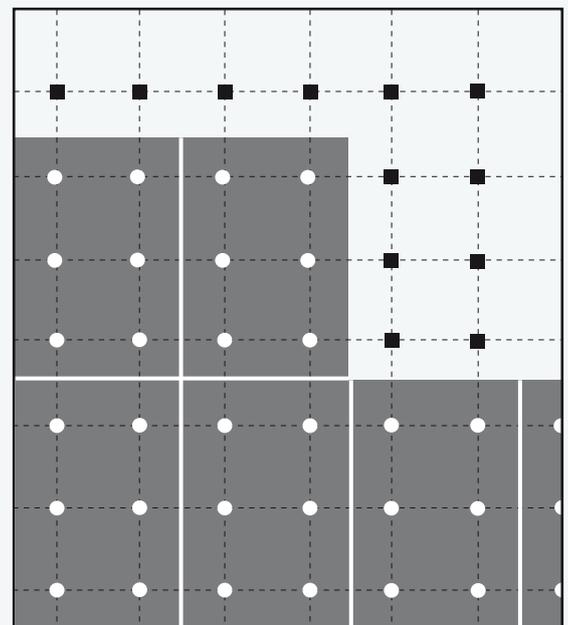
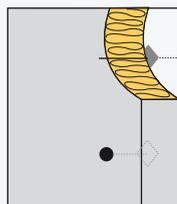
Installation using spindle pin with

1. Mark the spindle pin with distance each point for 30-45 cm. (In the case the concrete wall has already painted, please remove the painted only the point you want to install the spindle)

2. Install spindle with special adhesive that suite to each surface used, laminated the adhesive on the spindle based and leave till dry and settled to enhance its support fully to the object (better to select the spindle that fit the insulation thickness)



3. Install the  model with spindle pin by making it out to the insulation surface and covered its tip with washer (Washers are available in many types upon designer and user's need and application)



Suggestion

Cutting the out dimensions insulation can be done by remove the fabric first and cut only the out-dimension insulation out by simple cutter then covered back the fabric.

Sound insulation

Acoustic absorption for ceilings

Ecotone

Ecotone is the instant acoustic absorption sheet that closed the surface with special material that enhance its absorption property with ability to reduce the reverberation within the room, building and residence. While at the back of insulation covered by high moisture resistance embedded from factory, this could apply with T frame on ceiling or difference form of hanging T bar as it light, easily to install and not bending from moist but will forming in insulation shape longer. It suitable for meeting room, home theatre, music room, karaoke room, recording room, music rehearsal room, and cinema for instance.



Properties

Noise reduction coefficient is at 75% (NCR highest at 0.75) capable in reducing reverberation in the room, light weight, not bending from moist and forming longer in insulation shape, yet effectively in heat resistance from high temperature and help reduce air conditioning operating cost.



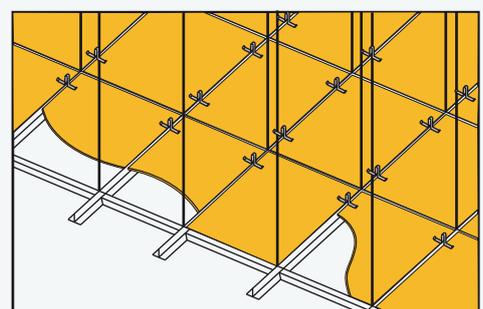
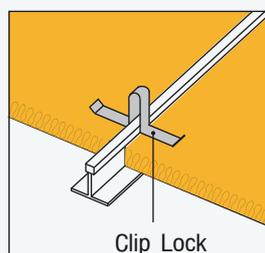
Product's details

| Product | Thickness | Size | Color | Closed skin Material |
|----------------|-----------|--|----------------------|---|
| Ecotone | 20 มม. | 595 x 595 mm. 600 x 600 mm. 595 x 1195 mm. 600 x 1200 mm. | Black or White | Closed the surface with special skin material while closed the back with moisture resistance material |

*For special product please inquire to company

Installation

Ecotone is the instant ceiling acoustic absorption sheet, produced and designed to apply with T - frame or T- Bar hanging for ceiling lock with clip lock to ceiling sheet to avoid the wind blow, easy to install, lightweight, able to cut in shape and size with simple knife, it helps save time and installation cost.



Acoustic absorption to reduce reverberation

Akoustics

Akoustics is the instant acoustic absorption sheet with high hardness and density, has a special characteristic in sound absorption and reduce reverberation inside the room or building and residence. Suitable for meeting room, home theatre, karaoke room, recording room, music rehearsal room, and cinema for instance.



Properties

High value of noise reduction

Able to apply in many interiors designed and decoration format

Easily to install by stick with glue and screw to any wall



Product's details

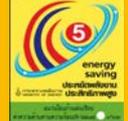
| Product | Thickness | Width | Length |
|-----------|-----------|---------|---------|
| Akoustics | 25 mm. | 0.60 m. | 1.20 m. |

*For special size please inquire to company

Noise Barrier

Noise Barrier is the special hardness acoustic absorption sheet paneling inside the wall, high density with size of *0.6 x 1.2M, encapsulated all sides with special water and moisture resistance, non-flammable and sunlight resistant. It's characteristic of insulation is opened called foam, with porous and high dense causing the insulation to absorb noise and reduce reverberation. Produced and designed for all wall appliances outside the building according to the international standard and Japanese standard such as troll wall, engine room wall, sound absorption for cooling tower and others for noise reduction, effectively noise absorption and reduce reverberation very well. (Please inquire to company once required Product size and special closed skin)

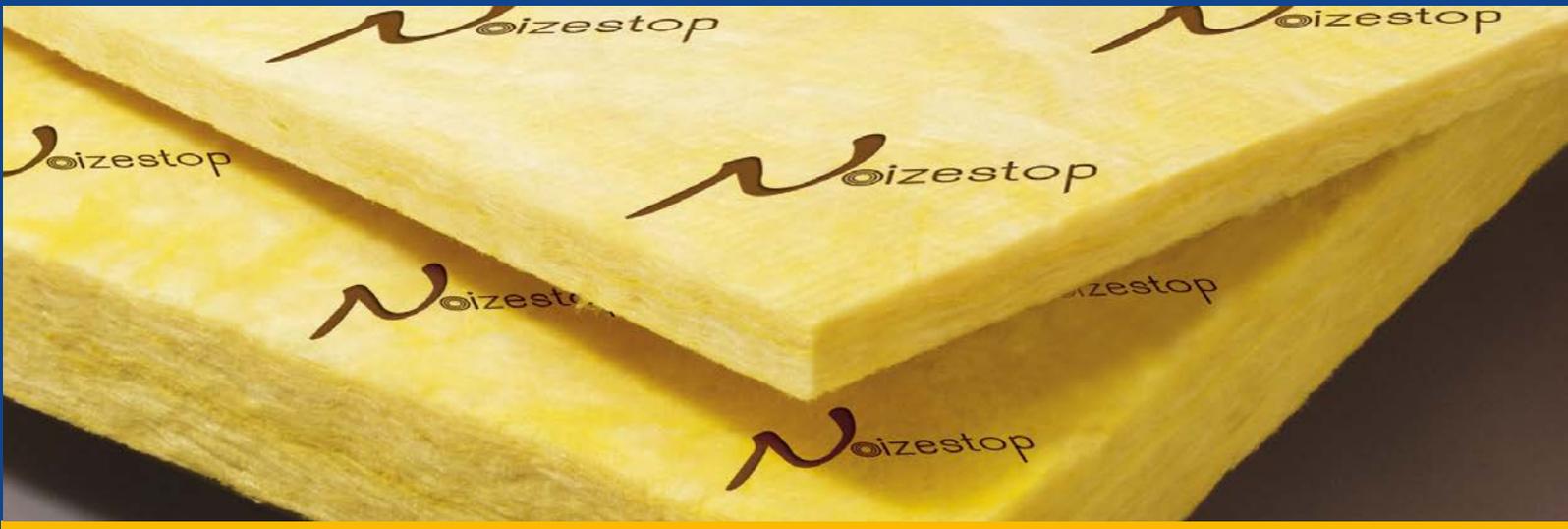




PROJECT REFERENCE

- | | |
|---|------------------------------|
| 1. ENERGY COMPLEX | 20. TEMPO |
| 2. PTT | 21. INDIA EMPORIUM |
| 3. JOHNSON & JOHNSON | 22. THE GOVERNMENT COMPLEX |
| 4. PANYAPIWAT INSTITUTE OF MANAGEMENT | 23. TISCO |
| 5. IBIS HOTEL PATTAYA | 24. HONDA |
| 6. IBIS HOTEL NANA | 25. AIRPORT LINK |
| 7. ASIA CENTER | 26. TOYOTA |
| 8. SUKHOTHAI THAMMATHIRAT OPEN UNIVERSITY | 27. KASEM BUNDIRT UNIVERSITY |
| 9. VOICE STATION | 28. SHANGRI-LA BANGKOK |
| 10. ARCHIVES OF THE OFFICE OF HIS MAJESTY'S PRINCIPAL PRIVATE SECRETARY | 29. TRISARA |
| 11. STUDIO CH. 7 | 30. RATCHADA TOWER |
| 12. THAI UNION FOOD | 31. KING POWER |
| 13. RANGSIT UNIVERSITY | 32. FENIX TOWER |
| 14. RAJAMANGALA UNIVERSITY OF TECHNOLOGY ISAN | 33. VICHAIYUT MEDICAL CENTER |
| 15. MEDIA OF MEDIA | 34. SIAM ESTATES |
| 16. SALA @ SATHORN | 35. SF CINEMA CITY |
| 17. SOFITEL | 36. MAJOR CINEPLEX |
| 18. ASSUMPTION UNIVERSITY | 37. EGV |
| 19. ASOKE COMPLEX |ETC |





Reference No. FSRC-006/51b Page 1 of 21

**FACULTY OF ENGINEERING
CHULALONGKORN UNIVERSITY
FIRE SAFETY RESEARCH CENTER**

TYPE OF TEST : DETERMINATION OF THE FIRE RESISTANCE OF NON-LOADBEARING ELEMENTS OF CONSTRUCTION

TEST SPECIMEN : GYPCBOARD PARTITION
The specimen is a 3 m x 3 m wall consisting of two layers of Gyprocboard Firestop 10" (13 mm) on a twin metal frame C-Steel 74 with a 75-mm thick MicroTone Type FS-N 3225 of 52-kg/m³ density in the middle attached to the Gyprocboard on the unexposed side. The Gyprocboard partitions on the exposed and unexposed sides were fixed to U-Track 76 (0.5 mm thick) frame as shown in Appendix C. The specimen was provided and installed by the client.

CLIENT : Thai Gypsum Products Ptd. Microfilter Industries Limited
559/2 Si Ayuthaya Road, Ratchathewi 3rd Fl., Ocean Insurance Bldg.
Bangkok, THAILAND 10400 No. 173 Sukhumvit 21 Rd. (Asoke)
North Klongtoey, Wattana Bangkok, THAILAND 10110

DATE OF TEST : May 30, 2008

TEST MACHINE : Large-scale vertical furnace (Fire Tester III) at the Fire Safety Research Center, Department of Civil Engineering, Chulalongkorn University (Thailand). The furnace is capable of producing a standard temperature-time relationship according to several fire resistance standards including ASTM E119-07a.

TEST METHOD : The testing procedures follow ASTM E119-07a. Standard test methods for fire tests of building construction and materials (excluding the hose stream test).

TEST RESULTS : 1. The non-loadbearing element of construction described above has the fire resistance of each criterion for the period stated:
(The test results are good only for the specimen tested.)

| Criteria | Fire Resistance (Minutes) | Remarks |
|------------|---------------------------|---|
| Insulation | 2:05 | The maximum temperature on the unexposed face of the specimen exceeded 181°C above its initial value of 24°C. |
| Integrity | 2:12 | Sustained flaming on the upper area of the specimen. |

Date: June 10, 2008

Tested by: (Associate Prof. Dr. Sriratanjanakorn) (Associate Prof. Dr. Chaitan Pothitorn)

(Associate Prof. Dr. Chakhan Sitjirapont) (Associate Prof. Dr. Chaitan Ocharatapakdee)
On Behalf of Head of Fire Safety Research Center, Faculty of Engineering, Chulalongkorn University

Fire Safety Research Center, Faculty of Engineering, Chulalongkorn University
Phayathai Road, Pathumwan, Bangkok 10330, Thailand. Tel: 0622-251-4316 Fax: 0622-251-4337

MicroTone Model

Apply to all kinds of walls

Increase its performance to last longer on flame retardant



Easy to install



Health friendly



Non-flammable



Non water absorption



Ecotone

Akoustics

Noise Barrier



Easy to install



Health friendly



Non-flammable



Non water absorption

 บริษัท ไมโครไฟเบอร์อุตสาหกรรม จำกัด
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