

Soundboard™



New ERA of Noise Proofing Board



Noise Pollution

People encounter loud noise every day. It takes place when there is excessive amount of noise come from both inside and outside building that tends to decrease quality of life and causes of poor work performance.

Noise Pollution Type :

1. Comes through the building from roof top such as airplane noise (120dB), thunder noise, rain noise.
2. Comes from upper to lower level of building i.e. Sound from walking steps, sound of running machines noise (70dB).
3. Through the wall i.e. Sound of conversations (60dB), sound from TV, music and home theater from adjacent room.
4. Noise from outside the building such as car, truck, motorcycle noise (60-90dB).



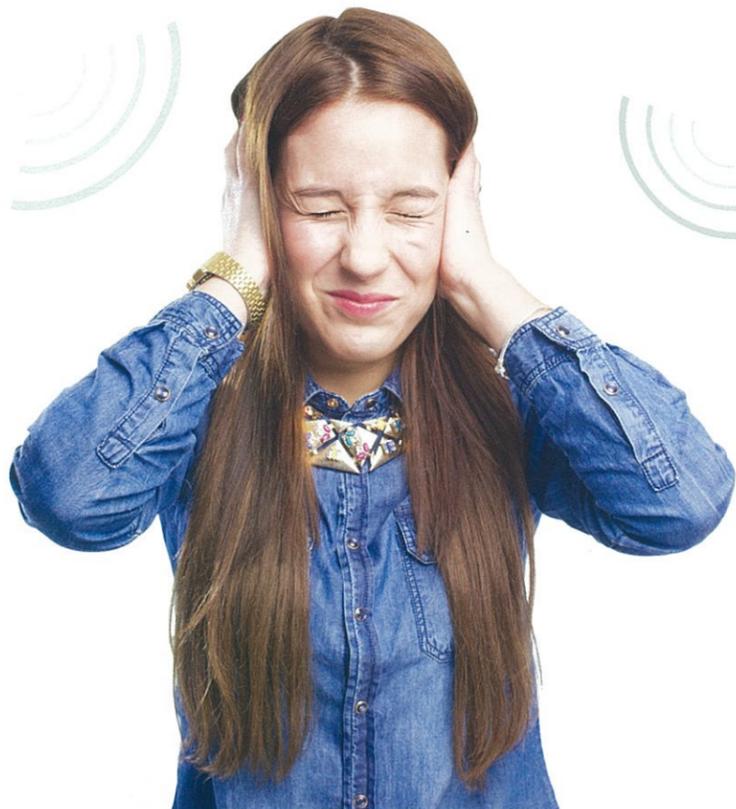
Basic Soundproofing Solutions

The basic soundproofing solution most designer often solve the problem by increasing the density and thickness of wall and ceiling system, these solutions caused the following issues.

1. Wasting the area and using the wall thickness by double to get the soundproofing level
2. Too much weight of structure and increase the cost of structure.
3. Brick Wall is wet system, take time to installation and hard to installation.



From those effects inspired Trandar Acoustics to research and develop new sound insulation material for solving noise problem for designer, developer and people



TSIS WALL

Trandar Acoustic, we are leader in acoustics system. From our research and development in the soundproofing material, finally we found the effectiveness of soundproofing system that we called "TSIS WALL SYSTEM"

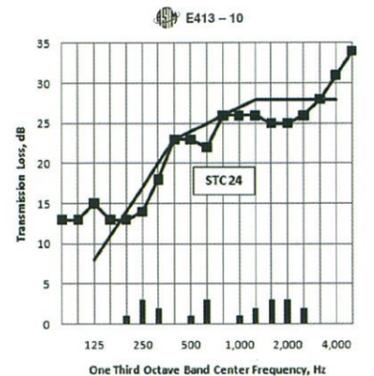
Sound Insulation

Sound insulation of material index is the measurement in effectiveness of material in restricting passage of sound that transmitted from source to other space. A sound insulation index will be different in each frequency in a similar material. In general, the frequency range 100-3,150 Hz is considered for sound insulation. There are two types of sound insulation; Airborne Sound and Structure Borne Sound. The measurement for the effectiveness of sound insulation or sound reduction called Transmission Loss (TL). The unit of measure of sound transmission loss is decibel (dB) that varies on each frequency range.

Sound Transmission Class (STC)

A single number rating of STC that indicates for TL many frequencies. In general, which material is high STC that mean a good performance in sound insulation. STC will be calculated from the weighted average over a range of 16 difference frequencies between 100-4,000 Hz of TL then compare to a standardized curve of ASTM E413 with 3 criteria as below;

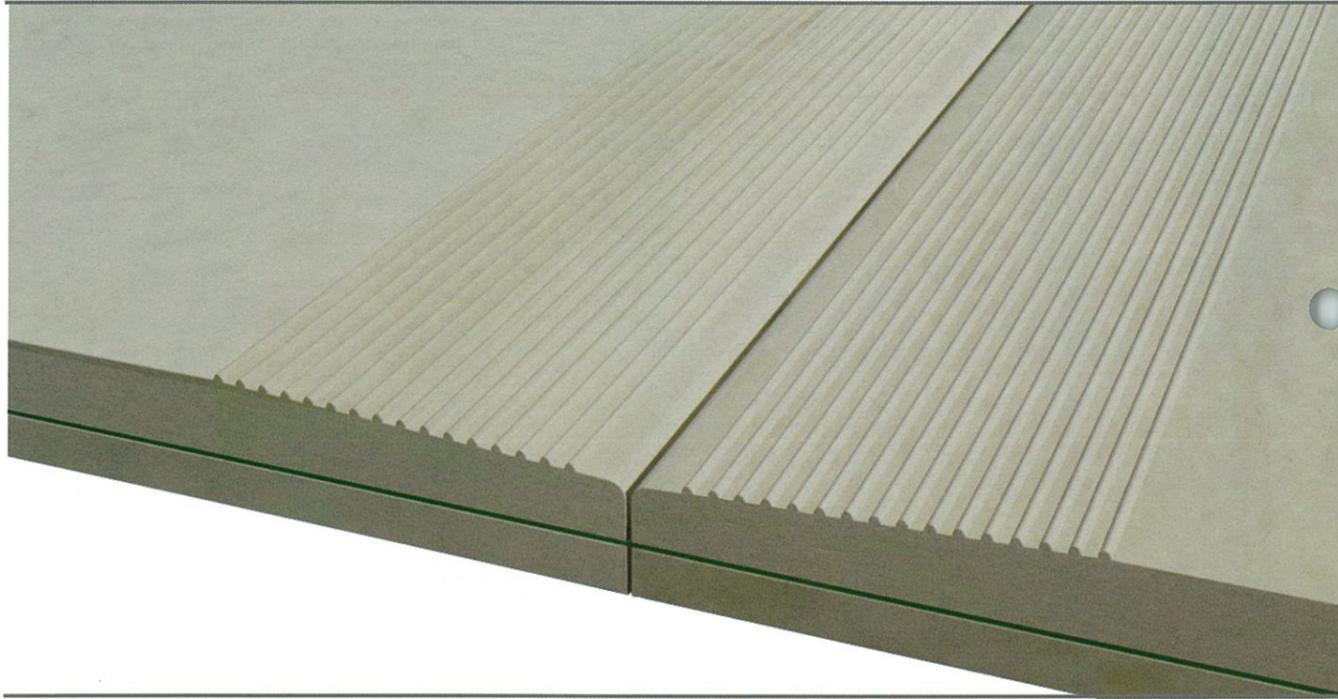
1. The sum of the difference frequencies between TL and a reference curve is not over 32 dB
2. The highest variance in each frequency of TL and a reference index is not over 8 dB
3. STC single number rating will be presented by TL index at 500 Hz of a reference curve



Decibels (dB)

The unit used to measure the intensity of a sound (dB). The smallest audible sound that human can hear is 0 dB and can't resist at level 120 dB. By the decibel algorithm scale, if the intensity of a sound reduces 3 dB then it will reduce a power of sound quantity 2 times.

The important part of the TSIS system is the soundboard that is installed in the system. The Trandar Acoustic TSIS team has developed the soundboard with damping compound technology in the soundboard. It reduces the sound transmission energy and enhances the sound insulation of the wall system with the research results, Trandar Acoustic offers style, size and the proper use of the soundboard system of the following two sloping edges.



Soundboard Product Range

	Thickness (mm.)	Width (mm.)	Length (mm.)	Weight (kg./m ²)	STC
 Wall System	15	1200	2400	21	36
 Ceiling System	10	1200	2400	14	33

Technical Details

Property	Unit
Sound Transmission Class (STC)	33 (10 mm. thk.) , 36 (15 mm. thk.)
Density	1400 kg/m
Thermal Conductivity	0.1938 W/m K
Non-combustible	1-2 hr

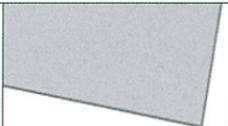
Specification

TSIS 58 d105 wall system is installed by Trandar stud C75, Soundboard 15 mm. recessed edges(RE) 1200 x 2400 mm. both sides, dBphon S75 600 x 1200 x 75 mm. Thermal Conductivity 0.1938 W/mK per ASTM C177 Installed inside the wall C75 stud and soundproof sealant covers parameter wall areas with Green Glue Sealant, TSIS 58 d105 wall system gets STC 58 per ASTM E90 with wall thickness 105 mm.

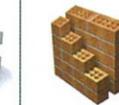
Advantage properties

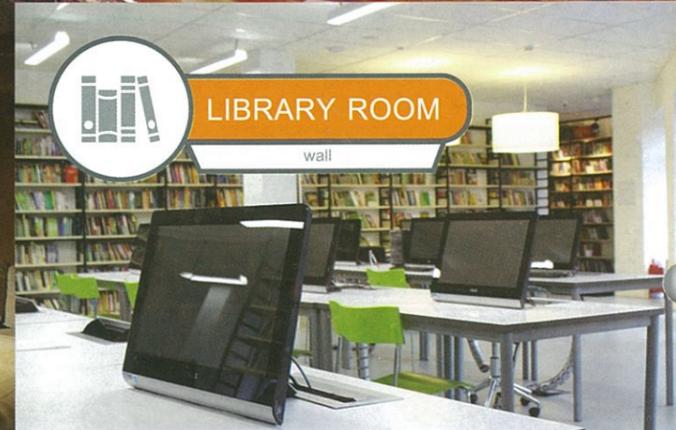
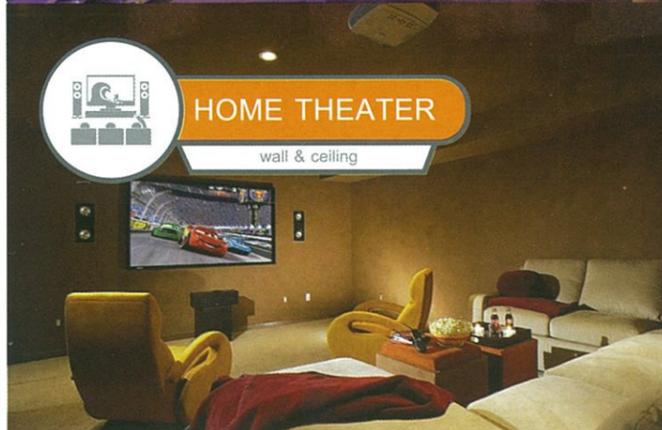
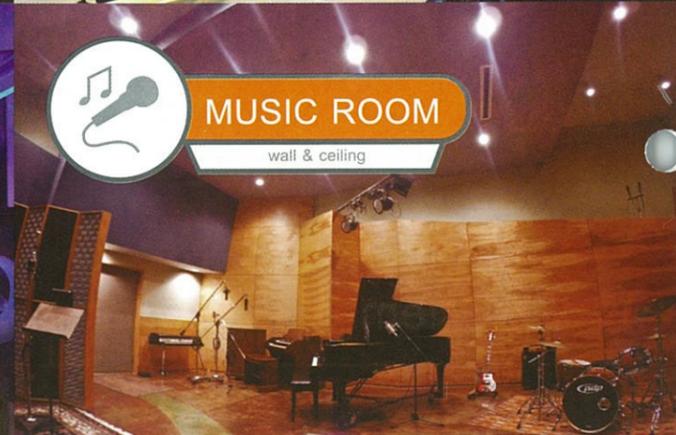
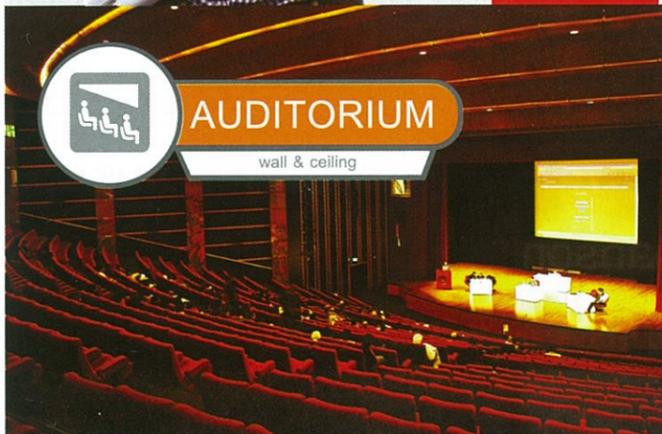
-  Soundboard has very high Sound Insulation STC 36 with thickness only 15 mm.
-  Thermal resistance value is higher than the brick wall. So help saving energy and cooling the room temperature.
-  Soundboard help reducing the thickness of the wall so we get more space.
-  Waterproof equivalent to fiber cement board.
-  Soundboard (TSIS Wall) is totally Dry wall system, So It is very easy for installation.
-  Lightweight 2-4 times lighter than brick wall.
-  Saving time for installation comparing to ordinary brick and lightweight concrete wall.
-  Strength and Impact resistance. Don't worry to break to wall, More security than Gypsum wall.
-  Soundboard is Non combustibile product and fire resistant property about 1-2 hr (TSIS Wall)

STC Property Material Comparison

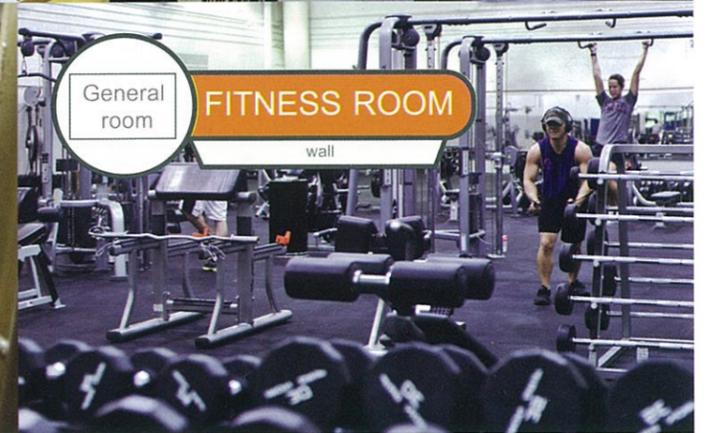
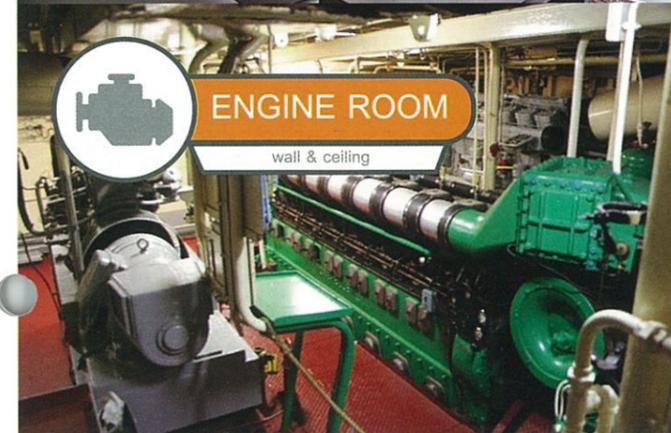
Material Thickness (mm.)	Sound Transmission Class (STC)			
				
	Plywood	Gypsum Board	Fiber Cement	Soundboard™
10	21	25	29	33
15	23	27	31	36

Wall System Comparison

Wall System					
	Brick wall	Concrete Block	Lightweight Concrete	Double Brick wall	TSIS 58 Soundboard™
Sound Transmission Class (STC)	38	35	35	50	58
Wall system thickness (mm.)	10	10	10	20	10.5
Wall Weight (kg/m ²)	180	120	90	360	45
R-Value(m ² k/W)	0.19	0.17	0.49	1.68	2.24
Fire resistant (hour)	1-2	1-2	1-4	2-4	1-2
Installation per day (Sq.m./man day)	6-12	15-25	15-25	3-6	30
Vertical-horizontal concrete support	Need	Need	Need	Need	No need



TSIS Wall and ceiling recommended functions



TSIS Wall Systems Design Guide

Easier to Design the wall functions

STC	Detail	perspective	section	Transmission loss	Recommended area
77	TSIS 77 d215 Layer 1 Lightweight concrete 100 mm. 2 Air Gap 10 mm. 3 Trandar Stud C75+Sound Insulation dBphon S75 4 Trandar Soundboard thickness 15 mm. 5 Trandar Soundboard thickness 15 mm.				
73	TSIS 73 d200 Layer 1 Trandar Soundboard thickness 15 mm. 2 Trandar Stud C65 or C50+Sound Insulation dBphon S50 3 Trandar Soundboard thickness 15 mm. 4 Air Gap 15 mm. 5 Trandar Stud C75+Sound Insulation dBphon S75 6 Trandar Soundboard thickness 15 mm.				
71	TSIS 71 d200 Layer 1 Lightweight concrete 100 mm. 2 Air Gap 10 mm. 3 Trandar Stud C75+Sound Insulation dBphon S75 4 Trandar Soundboard thickness 15 mm.				
66	TSIS 66 d180 Layer 1 Trandar Soundboard thickness 15 mm. 2 Trandar Stud C65+Sound Insulation dBphon S50 3 Air Gap 20 mm. 4 Trandar Stud C65 5 Trandar Soundboard thickness 15 mm.				
59	TSIS 59 d180 Layer 1 Trandar Soundboard thickness 10 mm. 2 Trandar Stud C65+Sound Insulation dBphon S50 3 Air Gap 30 mm. 4 Trandar Stud C65 5 Trandar Soundboard thickness 10 mm.				

STC	Detail	perspective	section	Transmission loss	Recommended area
58	TSIS 58 d105 Layer 1 Trandar Soundboard thickness 15 mm. 2 Trandar Stud C75+Sound Insulation dBphon S75 3 Trandar Soundboard thickness 15 mm.				
56	TSIS 56 d80 Layer 1 Trandar Soundboard thickness 15 mm. 2 Trandar Stud C50+Sound Insulation dBphon S50 3 Trandar Soundboard thickness 15 mm.				
53	TSIS 53 d95 Layer 1 Trandar Soundboard thickness 10 mm. 2 Trandar Stud C75+Sound Insulation dBphon S50 3 Trandar Soundboard thickness 10 mm.				
48	TSIS 48 d105 Layer 1 Trandar Soundboard thickness 15 mm. 2 Trandar Stud C75 3 Trandar Soundboard thickness 15 mm.				
43	TSIS 43 d95 Layer 1 Trandar Soundboard thickness 10 mm. 2 Trandar Stud C75 3 Trandar Soundboard thickness 10 mm.				

Installation Guide TSIS 58 d105



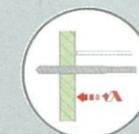
TSIS Wall Components

 Acoustic Tape used for covering the perimeter of the floor structure, pipe and beams in wall system help reducing the sound leakage

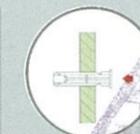
 Greenglue Sealant Greenglue Soundproof Sealant applying the joint of the TSIS wall

 dBphon dBphon is inorganic Wool that have a high Airflow Resistant used for reducing the sound resonance inside the wall

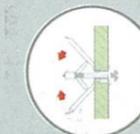
How to install butterfly screw



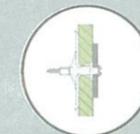
1. locate the spot by your drill and use it to make a hole at this point



2. Install butterfly plastic hook with ceiling or wall



3. Twist the screw by hand to tighten the assembly



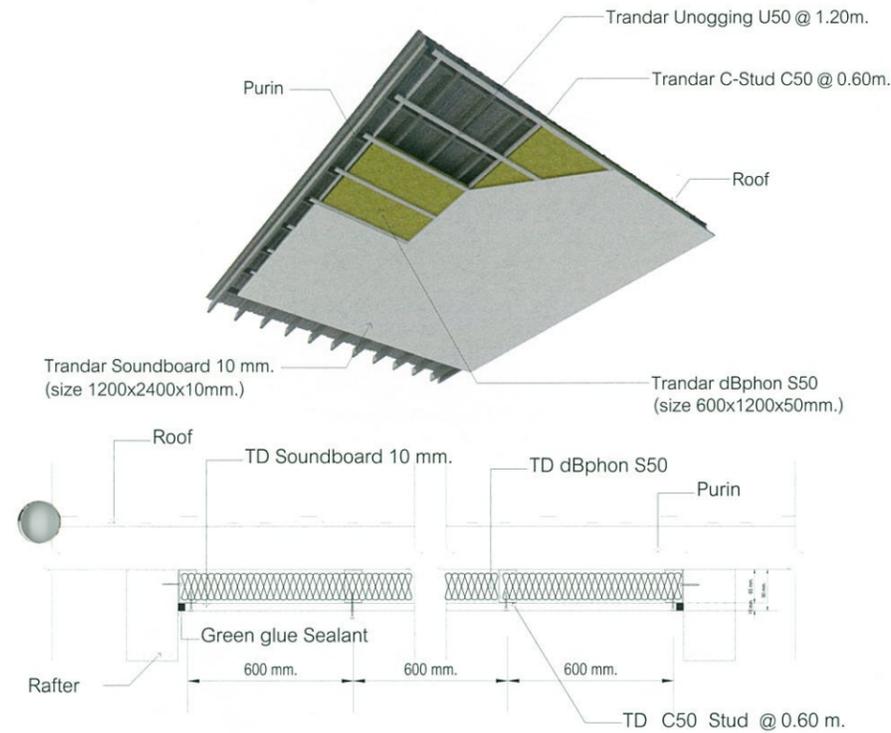
4. After pull on the head of the screw so that the expanded wings of the nut grasp the inside of the dry wall

TSIS Wall

Easy to hanging furniture to the wall
80 kg. per point load

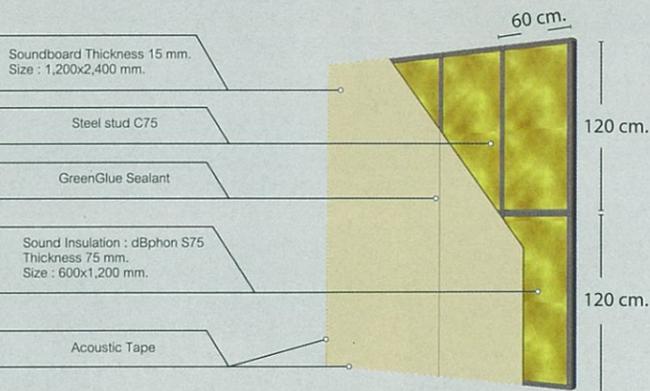
TSIS Wall INSTALLATION COMPONENTS

Trandar Soundboard Rain Noise Roof System



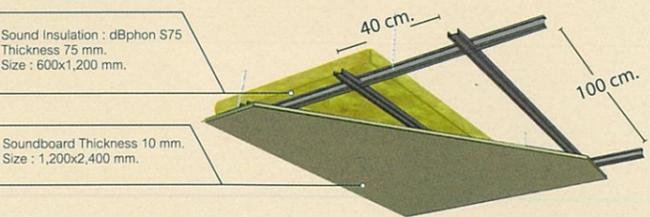
Trandar Soundboard ceiling system

1. Trandar Soundboard thickness 10 mm. (size 1200x2400x10 mm., Damping compound Technology)
2. Sound Insulation Trandar dBphon S50 (size 600x1200x50 mm.)
3. Trandar C50 stud @ 0.6 m. + Trandar U50 nogging stud @ 1.20 m. dBphon S50 Thermal Conductivity = 0.1938 W/mK (ASTM C177) Greenglue Sealant seal perimeter wall areas.



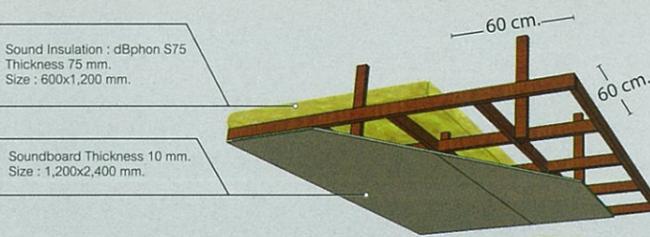
Soundproof Interior Walls

- | | |
|--------------------|---|
| Trandar Soundboard | Recessed edges(RE)15 mm. |
| Trandar wall stud | Galvanized metal stud C50, C65 or C75 #24 |
| Wall stud frame | Horizontal Trandar C Stud @ 60 cm.
Vertical Trandar U nogging Stud @ 120 cm.
Screw on Soundboard @ 40 cm.
dBphon S75 |



Soundproofing Ceiling Installed with Metal Stud

- | | |
|-----------------------|--|
| Trandar Soundboard | Recessed edges(RE)10 mm. |
| Trandar ceiling stud | Galvanized metal ceiling frame (C-line) #24 |
| Install ceiling frame | Main frame @ 100 cm.
Sub frame @ 40 cm.
Screw on Soundboard @ 30 cm.
dBphon S75 |



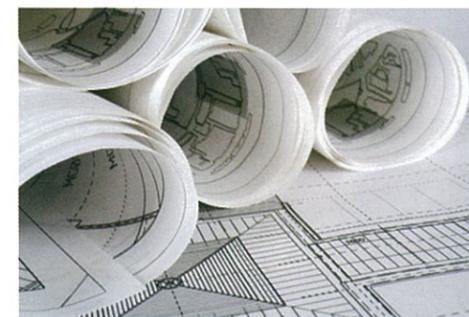
Soundproofing Ceiling with Installed with Timber Stud

- | | |
|-----------------------|---|
| Trandar Soundboard | Recessed edges(RE)10 mm.
Timber Stud 1" 1/2 x 3" |
| Install ceiling frame | 60 x 60 cm.
dBphon S75 |



Transportation and storage

1. Moving shall always by vertical lift both ends of the board and lift a least 30 cm. away from the edges of the board.
2. storage shall be indoor in a dry areas. Lay on a wood support not less than "1.5x3" 4 pieces of support under the board.
3. covering with water proof canvas.



Designer Suggestion

1. If the installer use other accessories that not Trandar TSIS wall system recommendation standard , it will be affect the sound insulation property of the wall.
2. Soundboard can design combine with other Wall System material. Please contact Trandar Acoustic for suggestion.

