

LABORATORY REPORT

THE AIRBORNE SOUND TRANSMISSION-LOSS
MEASUREMENTS

OF

“THE EKOBLOK WALL”

FOR

ECO MAT CO., LTD.



Chula Uni search
ศูนย์บริการวิชาการและนวัตกรรมการ

Year SEARCH is awarded © Chula University
Copyright © 2010 Chula University. All rights reserved.

ศูนย์บริการวิชาการแห่งจุฬาลงกรณ์มหาวิทยาลัย

CHULA UNISERVO



LABORATORY REPORT
ON
THE AIRBORNE SOUND TRANSMISSION-LOSS MEASUREMENTS
OF THE EKOBLOK CONCRETE WALL.

1. Description of the Specimens:

The test specimen is a light weight concrete block with the size of 39 x 19 x 7.5 centimeters. The surface density of each block is about 900 kg/m². During measurements, the specimens were installed as the wall between two reverberation chambers, as illustrated in Figure 1, with the size of 3.05 meters x 2.45 meters and plastered both surfaces of the wall with mortar cement to meet the 10 centimeters thickness.

2. Client:

ECO MAT CO., Ltd.

Royal City Avenue, Block F, 4th Floor
23/62-4 Soi Soonvijai, Rama 9 Road, Huaykwang,
Bangkok 10240,
Thailand.

Telephone 0-2203-0706 to 7

Facsimile 0-2203-0705

3. Test Period:

10 August 2006

4. Measurement Facilities:

The transmission-loss measurements were performed in a double-reverberation chamber, with a background noise less than 30 dBA.

The instruments used for the measurements are as follow:

- a) Brüel & Kjaer Free-field Condenser Microphones (model 4165)
- b) Brüel & Kjaer Microphone Pre-amplifier (model 2619)
- c) 01dB Symphonies computer-based Acoustics Analyzer
- d) 01dB dBBATI building Acoustics Software
- e) Brüel & Kjaer Loudspeaker Unit (model 4224)
- f) 01dB Cal21 -- Sound level calibrator
- g) Pentium 4-based notebook computer

5. The Airborne Sound Transmission-loss Measurements Procedure :

Before the transmission-loss measurement, the microphones calibration was done and the background noise was measured. Then, the pink noise was sent to the loudspeaker unit, which placed in the source room. There are two microphones used in this measurement. One was installed also in the source room to records the incident sound pressure level on the specimen before transmit through the material. Another microphone was placed in the receiving room to measure the transmission sound pressure level. All spectra were recorded and the transmission-loss (TL)



values were calculated at each frequency in the 1/3-octave band, relatively to the measurement of reference condition. The center frequencies in this measurement are at 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1kHz, 1.25kHz, 1.6kHz, 2kHz, 3.15kHz and 4kHz respectively.

6. Measurement Results:

The sound pressure level at each frequency, measured before and after transmit through each type of materials were analyzed and the airborne transmission-loss values for each material, at different frequencies are calculated, which shown in the Table 1. Along with table 1, are the spectra that illustrated in Figure 3.

However, this comparison spectra and TL-values in this measurement are valid only in this test condition. The TL-values may changed in other conditions. Thus, the installation and the size of the specimen can give the influences to the transmission-loss measurements.

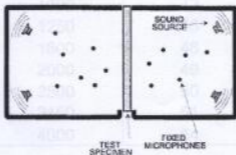


Figure 1. A schematic drawing of the measurement set-up in a double-reverberation chamber



Frequency (Hz)	TL (dB)
125	34
160	29
200	32
250	31
315	29
400	36
500	33
630	37
800	40
1000	42
1250	45
1600	48
2000	49
2500	50
3150	51
4000	54
STC	40

Table 1 The STC rating and the airborne Sound Transmission-loss (TL) values of each 1/3 octave frequency band.



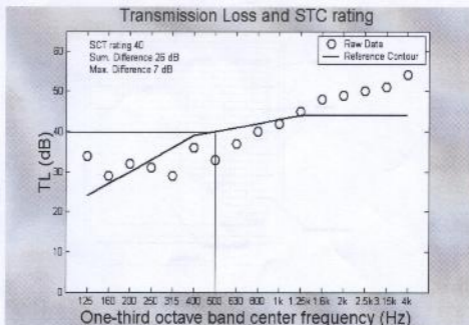


Figure 3. The STC rating and Transmission-Loss (TL) spectra of the test specimens.



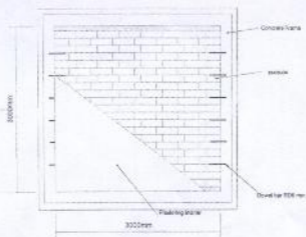


Figure 2. (a) The drawing of the specimen

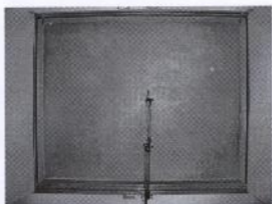


Figure 2. (b) The specimen was installed between two reverberation chambers