Test Report No. 7191030841-MEC12-EMK
dated 9 Apr 2012

PSB Singapore

Choose certainty.
Add value.

SUBJECT:

Laboratory measurement of airborne sound transmission loss of sound barrier sheet submitted on 2 Apr 2012.

TESTED FOR:

DATE OF TEST:

4 Apr 2012

DESCRIPTION OF SAMPLES:

2 pieces of Japan Sound Barrier Sheet were installed onto a filler wall opening of the sample carrier by Tarlic Engineering Construction. The overlapping joint section at the centre of the barrier sheet was fully sealed with PVC tape.

The measured dimension and weight of single piece of barrier sheet was 1950mm (width) x 3390mm (length) x 0.9mm (thickness) and 9.25kg respectively.

TÜV SÜD PSB

ACCREDITED LABORATORY SAC-SINGLAS

LA-2007-0380-A
LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-G
LA-2007-0385-E
LA-2007-0386-C
LA-2010-0464-D

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory

Laboratory:
TÜV SÜD PSB Pte. Ltd.
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

METHOD OF TEST:

The test was conducted in accordance with ASTM E90 - 04 "Standard test method for laboratory measurement of airborne sound transmission loss of building partitions and elements"

Measured area of barrier sheet: 3.12m x 3.11m = 9.703m^2
Air temperature in both source room and receiving room : 26°C
Relative air humidity in both source room and receiving room : 60%
Source room volume : 73m^3
Receiving room volume : 86m^3
Location of the test : Acoustics Lab of TÜV SÜD PSB Pte Ltd

TEST EQUIPMENT:

The following instruments were used for the test.

1) A dual-channel real-time frequency analyser (B&K Type 2133)
2) Two units of loudspeaker (JBL MPro MP415)
3) Two sets of ½" condenser microphone (B&K Type 4943)
4) Two sets of microphone preamplifer (B&K Type 2669)
5) A sound pressure level calibrator (Norsonic Type 1251)
6) A sound source amplifier (Crown model CE 1000)
7) Two sets of rotating microphone boom (B&K Type 3923)

TEST PROCEDURES:

1) Instrumentation was set up according to ASTM E90.

2) Measurement system was calibrated using a sound level calibrator.

3) Background noise level for both source room and receiving room were measured.

4) Two loudspeakers were placed at 2 corners in the source room.

5) Sound source system was switched on to generate "White" noise and maintained at constant level. The sound pressure level in the receiving room was ensured to be 15dB higher than the background noise level.

6) Recording time for both rotating microphone booms was set to 64s which equals to the time taken by the booms to complete two revolutions.

7) Sound pressure level difference between the source room and the receiving room was measured with an analyser, and the measurement was repeated 6 times.

8) Two loudspeakers were placed at 2 corners in the receiving room. The loudspeakers was switched on to generate "Pink" noise and maintained at constant level.

9) Reverberation time (RT) of the receiving room was measured twice.

10) Step 8 to Step 9 was repeated after the loudspeaker was moved to another position in the receiving room.

11) The mean values of the six readings for sound pressure level difference and four readings for RT values were calculated.

12) Values of sound transmission loss were determined for each 1/3 octave frequency band from 100Hz to 5kHz based on the mean values of step 11.

13) Sound transmission class was determined at the frequency of 500Hz of the shifted reference curve according to ASTM E413.

PSB Singapore

RESULTS:

Values of sound transmission loss (TL) of the Japan Sound Barrier Sheet were tabulated in Table 1. Sound insulation rating was computed according to ASTM E413 - 04 "Classification for rating sound insulation".

Table 1 : Measured Sound Transmission Loss, TL and values of the shifted reference curve for STC = 15

1/3 Octave Band Frequency (Hz)	Measured Sound Transmission Loss, TL (dB)	Shifted Reference Curve STC = 15 dB	Deficiency
100	7.1	-4.0	0.0
125	6.6	-1.0	0.0
160	6.8	2.0	0.0
200	7.9	5.0	0.0
250	8.4	8.0	0.0
315	9.2	11.0	1.8
400	8.9	14.0	5.1
500	10.2	**15.0**	4.8
630	11.1	16.0	4.9
800	12.8	17.0	4.2
1000	13.7	18.0	4.3
1250	15.2	19.0	3.8
1600	17.2	19.0	1.8
2000	18.9	19.0	0.1
2500	20.9	19.0	0.0
3150	22.8	19.0	0.0
4000	25.0	19.0	0.0
5000	26.9	19.0	0.0
		Total deficiency (125Hz – 4000Hz)	31

The values in Table 1 were plotted as shown in Figure 1.

Remark:

The tested barrier sheet achieved a sound transmission class, STC = 15.

Francis Ee Min Kuen
Testing Officer

Dr Sun Qiqing
Assistant Vice President
Acoustics
Mechanical Centre

PSB Singapore

RESULTS: (cont'd)

Figure 1 : Sound transmission performance of Japan Sound Barrier Sheet, STC 15