TEST REPORT

Subject :

Measurements of Airborne Sound Transmission Loss of Monoglass Panels and Metal Sheet Panel.

Client :

Nikkisia Industries Sdn. Bhd.,
54, Jalah Jejaka 7,
Taman Maluri, Cheras,
55100 Kuala Lumpur,
Malaysia.

Date of Test :

19 September - 23 September 1994

Location :

Acoustics Research Laboratory,
Faculty of Electrical Engineering,
Universiti Teknologi Malaysia,
54100 Kuala Lumpur,
Malaysia.

The receiving room of the test Laboratory has an internal volume of approximately $19m^3$

Description of Test Specimen :

The specimen tested were monoglass panels and metal sheet panel. The panels are categorized into three samples as follow :

a) Sample # 1 : Metal Sheet with spray on monoglass.The dimensions are 1200mm width, 1200 mm length and 38mm thick.

b) Sample # 2 : The combination of metal sheet with spray on monoglass, with the dimension of 1200mm width, 1200mm length and 38mm thick.
An air gap of 120mm and wire mesh with spray on mono glass with the dimension of 1200mm width, 1200mm length and 64mm thick.

c) Sample # 3 : Bare metal sheet with the dimension of 1050mm width, 1050mm length and 0.5mm thick.

Instrumentation :

All instruments utilized in the test conform with the requirements of the current ANSI-ASA Standards. Microphone used was calibrated prior to and following the test.

The Instruments used were :

1. Norsonic Real -Time Analyzer.
Type 830 with Reverberation Time Calculation option.

2. Bruel and Kjaer Sound Source Type 4224.

3. Bruel and Kjaer Sound Level Calibrator Type 4230.

Test Procedure :

The tests were conducted in general conformance with the America Society of Testing and Material Standard E90-85 "Laboratory Measurement of Airborne Transmission Loss of Building Partitions". In summary, a test specimen was installed in the opening between two adjacent but acoustically isolated reverberation rooms An approximate diffuse sound field was produced in one room designated, the source room, and the resulting space averaged sound pressure level in the two rooms were measured. In addition, to the test specimen in place, the sound absorbtion in the receiving room was determined. The transmission loss (dB) was calculated in accordance with 5.1 of ASTM E90-85 at 1/3 octave band between 125Hz-5000Hz. The measured noise reduction data was then compared with a standard classification curve to obtain the sound transmission class (STC)

Test Results :

Measurement results of the transmission loss and STC are as tabulated in the attached table.

Test conducted and reported by :

M Ahuccel Ngni Bauz 27/10/54

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TL Determinations

$Tl = L1-L2 + 10 \log S - 10 \log A$, (Sample # 1 : Metal Sheet with Monoglass)

Freq. (Hz)	L1, Tx Average 5 Location	b/g Noise, Tx (dB)	L2, Rx Average 5 Location	b/g Noise, Rx (dB)	10 log S	10 log A	TL (dB)
125	84	22.4	60.7	21.7	0	1.9	21.4
160	81.4	24.8	63.8	26.6	0	3.8	13.8
200	83.5	24.1	63.3	28.7	0	2.8	17.4
250	80.8	22.7	61.4	25.7	0	3.7	15.7
315	82.1	22.5	61.2	24.8	0	3.3	17.6
400	83.8	29.0	59.3	22.8	0	3.4	21.1
500	85.7	25.3	58.0	22.0	0	3.6	24.1
630	85.9	23.9	54.4	24.2	0	3.7	27.8
800	85.9	21.5	50.5	24.3	0	3.6	31.8
1k	83.2	20.9	44.5	25.4	0	3.9	34.8
1.2k	80.8	19.7	38.3	21.0	0	4.0	38.5
1.6k	83.0	20.2	36.0	17.5	0	4.4	42.6
2k	83.3	20.7	33	16.8	0	4.7	45.6
2.5k	82.0	20.4	28.6	16.1	0	4.8	48.6
3.15k	77.9	18.3	23.2	16.1	0	4.9	49.8
4k	78.3	18.7	19.8	15.6	0	5.0	53.5
5k	73.8	18.1	16.7	15.4	0	5.3	51.8

Summary

Freq. (Hz)	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k
Loss (dB)	21.4	13.8	17.4	15.7	17.6	21.1	24.1	27.8	31.8	34.8	38.5	42.6	45.6	48.6	49.8	53.5

Sound Transmission Class (STC) = 28

TL Determinations

Tl = L1-L2 + 10 log S - 10 log A, (Sample # 2   : Metal Sheet Monoglass, Air Gap and Wire mesh Monoglass)

Freq. (Hz)	L1, Tx Average 5 Location	b/g Noise, Tx (dB)	L2, Rx Average 5 Location	b/g Noise, Rx (dB)	10 log S	10 log A	TL (dB)
125	88.1	20.2	55.7	17.7	0	2.8	29.6
160	85.4	24.6	58.8	18.5	0	5.2	21.4
200	86.3	24.3	58.9	20.5	0	4.6	22.8
250	83.8	32.9	56.5	16.8	0	4.2	23.1
315	86.8	24.0	55.6	21.7	0	4.2	27.0
400	86.8	30.4	53.9	14.1	0	4.4	28.5
500	88.9	23.0	52.1	11.0	0	4.9	31.9
630	89.4	21.8	47.6	12.7	0	5.3	36.5
800	89.1	20.5	42.2	11.6	0	5.5	41.4
1k	85.7	18.3	34.1	12.7	0	5.6	46.0
1.2k	83.7	17.1	26.2	13.2	0	5.8	51.7
1.6k	86.0	17.5	21.7	14.0	0	5.9	58.4
2k	86.0	17.5	19.0	14.8	0	6.1	60.9
2.5k	85.0	17.4	17.8	19.4	0	6.1	61.1
3.15k	80.8	15.3	22.0	24.7	0	6.1	52.7
4k	81.5	15.7	16.9	18.7	0	6.3	58.3
5k	76.9	15.6	14.6	15.5	0	6.5	55.8

Summary

Freq. (Hz)	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k
Loss (dB)	29.6	21.4	22.8	23.1	27.0	28.5	31.9	36.5	41.4	46.0	51.7	58.4	60.9	61.1	52.7	58.3

Sound Transmission Class (STC) = 37

TL Determinations

Tl = L1-L2 + 10 log S - 10 log A, (Sample # 3 : Metal Sheet only)

Freq. (Hz)	L1, Tx Average 5 Location	b/g Noise, Tx (dB)	L2, Rx Average 5 Location	b/g Noise, Rx (dB)	10 log S	10 log A	TL (dB)
125	85.2	31.3	73.4	22.9	0	1.9	9.9
160	82.3	28.9	70.6	25.3	0	1.5	10.2
200	83.3	30.5	69.8	30.8	0	1.3	12.2
250	82.4	27.8	67.2	24.5	0	1.5	13.7
315	83.7	30.0	68.8	26.1	0	1.1	13.8
400	85.2	26.5	67.2	24.0	0	1.5	16.5
500	86.5	18.9	66.0	23.6	0	1.6	18.9
630	88.0	24.5	65.3	21.6	0	1.8	20.9
800	87.6	19.6	63.1	20.7	0	2.1	22.4
1k	85.2	16.7	58.7	19.5	0	2.6	23.9
1.2k	83.1	15.6	55.4	20.1	0	2.5	25.2
1.6k	85.0	16.9	57.0	21.1	0	2.8	25.2
2k	85.8	18.0	57.4	20.6	0	3.2	25.2
2.5k	85.0	20.2	56.1	22.9	0	3.4	25.2
3.15k	80.3	26.6	49.7	19.7	0	3.5	27.1
4k	80.6	20.1	47.2	20.4	0	3.6	29.8
5k	76.5	16.7	40.9	19.0	0	3.9	31.7

Summary

Freq. (Hz)	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k
Loss (dB)	9.9	10.2	12.2	13.7	13.8	16.5	18.9	20.9	22.4	23.9	25.2	25.2	25.2	25.2	27.1	29.8

Sound Transmission Class (STC) = 23

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