

RIVERBANK ACOUSTICAL LABORATORIES

1512 S. BATAVIA AVENUE
GENEVA, ILLINOIS 60134

Alion Science and Technology

630/232-0104
FOUNDED 1918 BY
WALLACE CLEMENT SABINE

TEST REPORT

FOR: Therm-O-Lite Inc.
South Bend, IN

Sound Transmission Loss Test
RAL™-TL05-083

ON: Therm-O-Lite Fixed Panel
Interior and Storm Windows - 1/4" Laminated (0.030) -
2.875" AS - 3/16" Clear

Page 1 of 3

CONDUCTED: 19 April 2005

TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-04 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the manufacturer as Therm-O-Lite fixed panel - interior and storm windows - 1/4" laminated (0.030) - 2.875" AS - 3/16 clear. The overall dimensions of the specimen as measured were 1.21 m (47.375 in.) wide by 2.43 m (95.375 in.) high and 187 mm (5.5 in.) thick. The specimen consisted of a framed glass unit inside a wood buck. The overall dimensions of the framed glass unit was 1.12 m (44 in.) wide by 2.35 m (92.5 in.) high and 84 mm (3.31 in.) thick. The frame width measured 64 mm (1.75 in.) wide. Daylight opening of the glass was 1.07 m (42.25 in.) wide by 2.28 m (89.625 in.) high. The specimen was placed directly in the laboratory's 1.22 m (4 ft) by 2.44 m (8 ft) test opening and was sealed on the periphery (both sides) with a dense mastic.

The weight of the specimen as measured was 94.6 kg (208.5 lbs.), an average of 36 kg/m² (7.4 lbs/ft²). The transmission area used in the calculations was 2.7 m² (28.5 ft²). The source and receiving room temperatures at the time of the test were 24±2°C (75±2°F) and 54±1% relative humidity. The source and receive reverberation room volumes were 178 m³ (6,297 ft³) and 129 m³ (4,566 ft³), respectively.

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TEST RESULTS

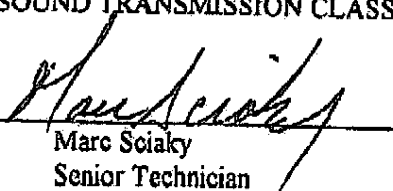
Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-04.

<u>FREQ</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>
100	31	0.82		800	53	0.22	
125	35	0.92		1000	57	0.14	
160	34	0.65	2	1250	58	0.13	
200	34	0.55	5	1600	60	0.12	
250	38	0.57	4	2000	59	0.10	
315	42	0.45	3	2500	50	0.13	3
400	41	0.34	7	3150	55	0.08	
500	45	0.36	4	4000	58	0.08	
630	50	0.30		5000	64	0.06	

STC=49

ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)
T.L. = TRANSMISSION LOSS, dB
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT
DEF. = DEFICIENCIES, dB < STC CONTOUR (SUM OF DEF = 28)
STC = SOUND TRANSMISSION CLASS

Tested by 
Marc Soiak
Senior Technician

Approved by 
David L. Moyce
Laboratory Manager

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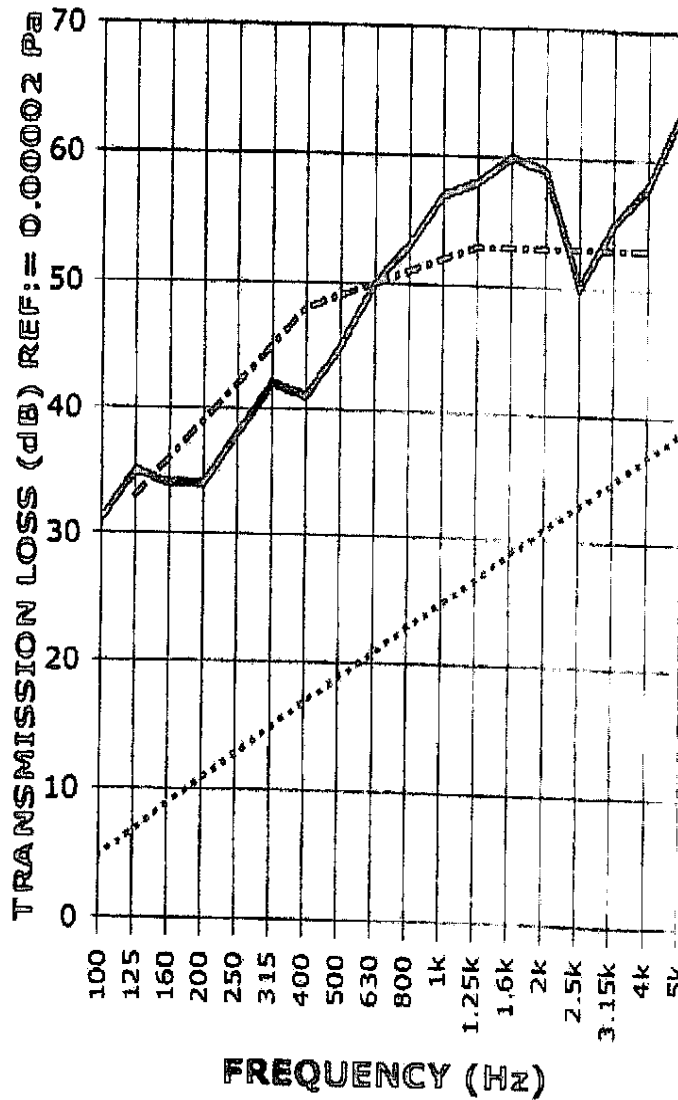
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STC = 49

TRANSMISSION LOSS
 SOUND TRANSMISSION LOSS CONTOUR
 MASS LAW

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9. TRANSMISSION OF SOUND THROUGH STRUCTURES

Table 2. Typical hearing quality for a wall of rated sound transmission class (STC)

Sound Transmission Class (STC)	Hearing Quality Through Wall
25	Normal speech understood quite easily and distinctly through wall
30	Loud speech understood fairly well, normal speech heard but not understood
35	Loud speech heard but not intelligible
40	Onset of "privacy"
42	Loud speech audible as a murmur
45	Loud speech not audible, 90% of statistical population not annoyed
50	Very loud sounds such as musical instruments or a stereo can be faintly heard, 99% of population not annoyed

From <http://www.csudh.edu/admin/proposal/NTC-Final%20EIR/Vol1-Final%20EIR/4.7%20Noise.PDF>

National Training Center
 Final Environmental Impact Report

Volume 1
 4.7 Noise

Criteria For Determination Of A Significant Impact

A significant impact would result if the construction and operation of the Proposed Project, including traffic-generated noise, creates a substantial permanent increase in ambient noise levels. An increase of 3 dBA is widely accepted as the point at which a person can perceive a change in noise levels. However, an increase becomes clearly noticeable at 5 dBA and is therefore considered to be a "substantial" increase. Therefore, the Proposed Project would have a significant impact if it results in an increase of 5 dBA or greater in the ambient noise level at any sensitive receptor.

From Hoover and Keith Table 1-2 (slightly modified by adding 1 dB)

Likewise, subjective rating measurements over the years has resulted in a table similar to that below which shows the perception of changes in sound levels.

Sound Level Change	Relative Loudness
0 dB	Reference
1 dB	Imperceptible
3 dB	Perceptible Discernible Change
6 dB	Clearly Noticeable Change
10 dB	Twice as Loud

See also Architectural Acoustical: principles and Practice. Cavanaugh pg 16 and Figure 1.13
 Available at <http://www.cavtozzi.com/>