RIVERBANK ACOUSTICAL LABORATORIES

GENEVA, ILLINOIS

FOUNDED 1918 BY WALLACE CLEMENT SABINE

REPORT

FOR: National Cellulose Corporation

Sound Transmission Loss
Test TL 69-173

ON: Drywall Partition: 3-5/8 Inch Metal Studs Spaced 24 Inches O.C., Faced on Both Sides With 5/8 Inch Thick Gypsum Board. Internally Sprayed With K-13 Insulation.

CONDUCTED: 27 February 1969

INTRODUCTION: The method used in making these measurements meets explicitly both the American Society for Testing and Materials Designation: ASTM E90-66T, and the American Standards Association Recommended Practice: ASA-Z 24.19-1957, for the laboratory measurement of airborne sound transmission loss. Further description is available upon request.

DESCRIPTION OF THE SPECIMEN: The test specimen was a drywall partition constructed by the client and shipped to the laboratory for the measurement. The specimen with its test frame had overall dimensions 72 inches wide and 84 inches high. The specimen was fabricated of 3-5/8 inch metal studs spaced 24 inches o.c. and set into metal channels. The stud framing was faced on both sides with 5/8 inch thick gypsum board horizontally applied and attached with screws spaced 12 inches o.c.. Internally the specimen was sprayed on one side with K-13 insulation to an average depth of 1-1/2 inches and a density of 4 pounds per cubic foot. All external screw heads and joints were finished with a typical drywall joint system. The specimen weighed 254 pounds, an average of 6.6 pounds per sq ft and had a thickness of 5 inches. A drawing of the construction is in the laboratory file. The transmission area, S, used in the computations was 38.4 sq ft.

RESULTS OF MEASUREMENTS: Sound transmission loss values are tabulated at the eighteen standard frequencies. An explanation of the sound transmission class rating, a graphic presentation of the data, and additional information appear on the following pages.

FREQUENCY Hertz (cps)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
TRANSMISSION LOSS, dB	24	29	35	38	41	41	44	45	49	52	52	53	53	51	50	53	55	57
DEFICIENCIES		4	1	1	1	4	4	4	1					2	3			

SOUND TRANSMISSION CLASS 49

This is a revised report that supersedes the original with same number. August 12, 1969.

Approved William Siekman
William Siekman
Manager

Submitted by D. A. Zedonis
D. A. Zedonis
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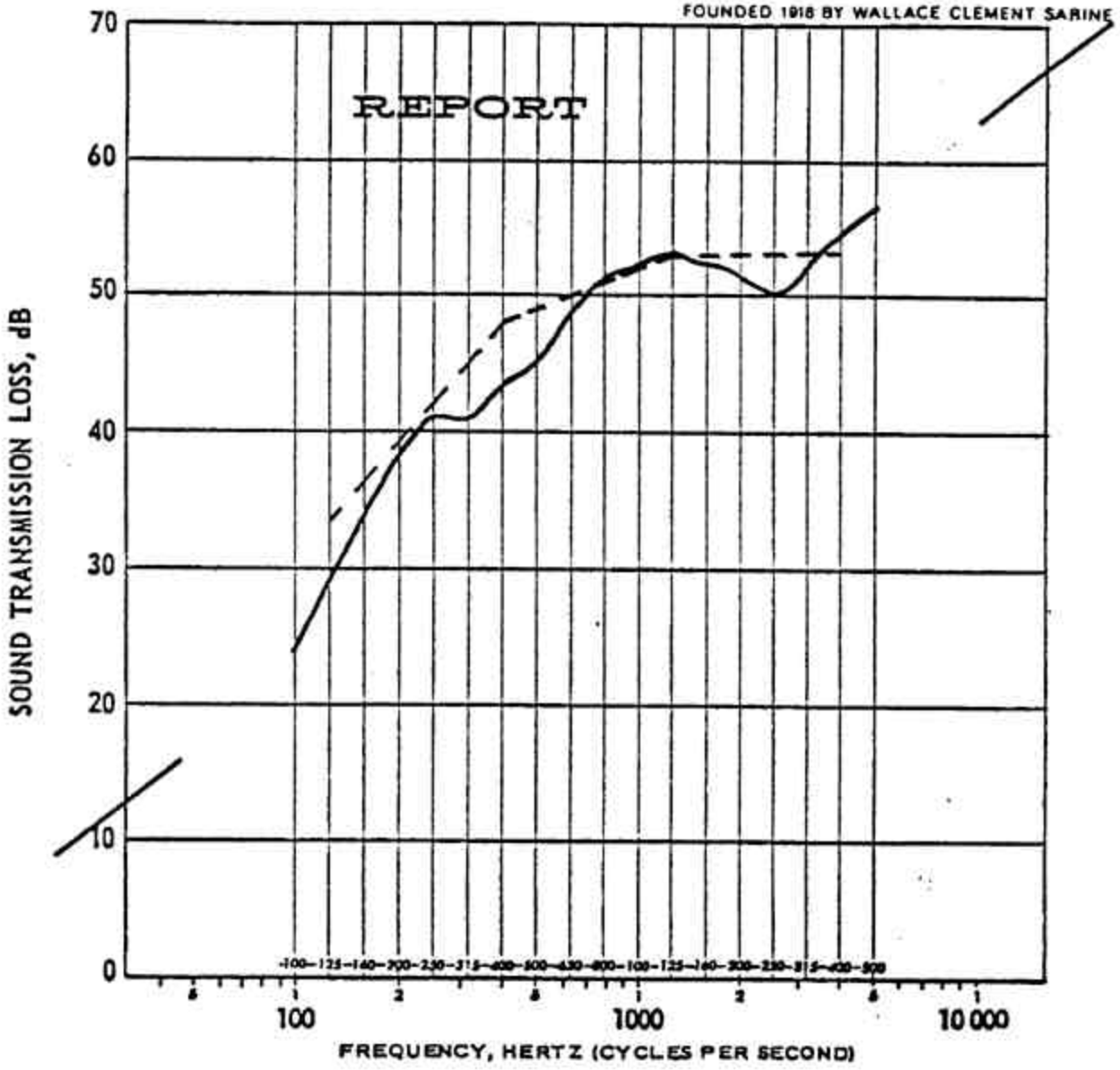
REPORT

The airborne sound transmission loss (TL) of a specimen is the ratio, expressed in decibels, (dB) of the sound power incident upon the partition to the sound power transmitted through and radiated by the partition when the sound fields on both sides are diffuse.

These measurements were made using a one-third octave band of pink noise, swept in thirteen minutes from 100 to 5000 Hertz (cycles per second). Runs were made before and after a system interchange, during which the ratio of sound pressure levels in the two rooms was directly recorded graphically. The final results were obtained by averaging the runs, with a resultant precision within a 90% confidence limits of $\pm$ 1 dB.

The Sound Transmission Class (STC) is computed in accordance with ASTM E90-66T and RM14-2. This number is intended to be used as a preliminary estimate of the acoustical properties of the specimen. Final decisions should be based upon the entire TL curve or the values at all the test frequencies.

When a filler wall is used in mounting the specimen, the sound power transmitted through this wall is calculated and, if necessary, appropriate changes made in the measured results.



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THE SOUND TRANSMISSION LOSS OF THE TESTED SPECIMEN IS SHOWN BY THE CURVED LINE IN THE ABOVE GRAPH. THE BROKEN LINE IS THE LIMITING SOUND TRANSMISSION CLASS CONTOUR. THE GRAPH WAS PREPARED ON CODEX PAPER NO. 31, 462.

THE THEORETICAL TRANSMISSION LOSS OF THAT LIMP MASS HAVING THE SAME WEIGHT PER SQUARE FOOT AS THE SPECIMEN CAN BE LOCATED BY DRAWING A STRAIGHT LINE BETWEEN THE TWO SLASH MARKS ON THE EDGES OF THE GRID. THIS WAS DERIVED FROM THE EQUATION: $TL = 20 \log W + 20 \log F - 33$, WHERE W IS WEIGHT IN POUNDS PER SQUARE FOOT, AND F IS FREQUENCY IN HERTZ (CYCLES PER SECOND).