

AIRBORNE SOUND TRANSMISSION LOSS MEASUREMENTS PER ASTM E90-09 FOR FELLERT ACOUSTIC PLASTER ON GLASS FIBRE BOARD

CONCLUSIONS

The airborne sound transmission loss for Fellert acoustic plaster on a 1.5" glass fibre board (density 96 kg/m^3) and a 12.5 mm gypsum wall board has been measured according to the method described in ASTM E90-09. The glass fibre board was glued to the gypsum wall board using a cementitious adhesive. Measurement results in terms of Sound Transmission Class (STC) is shown in the table below.

Specimen	STC
Alpha Base+Top on 1.5" glass fibre board and 12.5 mm gypsum wall board	34

1. CLIENT

Fellert Ecooustic System AB, Box 1209, S-501 12 Borås, Sweden.
Contact: Michael Rosenberg, tel +46 33 - 430 22 02.

2. WORK DEFINITION

To measure the airborne sound transmission loss by the method described in ASTM E90-09 for Fellert Alpha Base + Top plaster on a 1.5" glass fibre board, with a backing 12.5 mm gypsum board. The measurement result should be evaluated for Sound Transmission Class (STC) as described in ASTM E413-04.

3. TEST SPECIMEN

The test specimen was built directly into the laboratory's test opening (3650 x 2750 mm) and had the following layers:

1. Fellert Alpha Top plaster, ca 1 mm thickness, 0.1 kg/m^2 weight
2. Fellert Alpha Base plaster, ca 2.5 mm thickness, 0.3 kg/m^2 weight
3. Fellert glass fibre board, 38 mm thickness, 3.6 kg/m^2 weight
4. Gypsum wall board, 12.5 mm thickness, 9.0 kg/m^2 weight

The glass fibre board was glued to the gypsum board using a cementitious adhesive. The specimen was supported by a frame around the test opening and by studs with c/c 900 mm.

The frame and studs were made of wood, 45 x 95 mm. An elastic seal was applied between the frame and the test opening. The glass fibre boards were prefabricated with plaster and glued to the gypsum boards in the laboratory 2 days prior to the measurement. All joints were carefully sealed with duct tape. The perimeter of the specimen was also sealed with duct tape at two positions: first between the test opening and the gypsum boards and second between the plaster and the test opening.

The specimen was mounted by Fellert 2010-03-02 and the measurements were performed 2010-03-04. Measurements were made in a single direction.

4. MEASUREMENT EQUIPMENT

The equipment used in the measurements is presented in Table 1. The measurement equipment complies with Class 1 equipment according to IEC 61672-1, 60942 and 61260. Date for the latest calibration is kept in Akustikverkstan's calibration log.

Instrument	Type	Serial number
Real time analyzer	Norsonic 121	31204
Omnidirectional loudspeaker	Elton Kub 1	6
Microphone	Norsonic 1230	24438
Microphone preamplifier	Norsonic 1201	23686
Amplifier	Denon POA 2200	-

Table 1: The measurement equipment that was used during the measurements.

5. RESULTS

The measurements were performed according to the standard ASTM E90-09 and evaluated according to ASTM E413-04, and the results are presented in terms of Sound Transmission Class (STC) in Table 2. Complete spectra and evaluated results are presented in Appendix 1: *Sound Transmission Loss per ASTM E90-09 and E413-04*.

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Table 2. Measurement results.

Data for flanking limit tests, repeatability measurements and reference specimen tests are available on request.

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PhD in acoustics

Reviewed by Anders Bertilsson, 2010-05-25

SOUND TRANSMISSION LOSS PER ASTM E90-09 AND E413-04

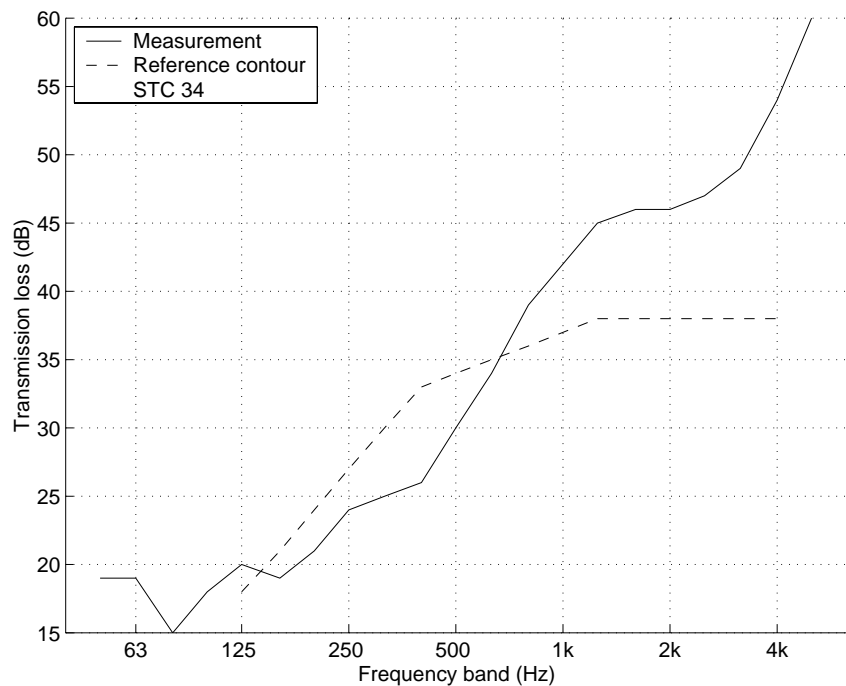
Measurement of airborne sound transmission loss in a laboratory

Client: Fellert Ecooustic System AB, Sweden

Object: - Fellert Alpha Base+Top
- 1.5 inch (38 mm) glass fibre board
(density 96 kg/m³)
- 12.5 mm gypsum board

Weight: 13.0 kg/m²

Frequency (Hz)	TL (dB)
50	19
63	19
80	15
100	18
125	20
160	19
200	21
250	24
315	25
400	26
500	30
630	34
800	39
1000	42
1250	45
1600	46
2000	46
2500	47
3150	49
4000	54
5000	60



Date of test: 2010-03-02

Object size: 3.65 x 2.75 m

Relative humidity: 70 %

Date: 2010-03-25

Source room volume: 130 m³

Temperature: -3 °C

Receiver room volume: 200 m³

Test report 10-15-R2

Signature: Pontus Thorsson

AKUSTIKVERKSTAN