

Ødegaard & Danneskiold-Samsøe A/S

Consulting Engineers - Noise and vibration control

Sound Insulation Sheet

Description	A60-N2 "45 dB" Window	Test Date: 17/07/2003	Sign.: SD
Client	C.C. Jensen A/S Window Division Løvholmen 13 DK-5700 Svendborg Denmark		
Contact person	Mr. Niels Korsager Andersen		
Description of Object	The tested window is a A60 fire-class construction consisting of A60 glass 12-16-8.8/5/4/8.8 window panes. The window pane is placed in a Gasket Type LTE Silicone rubber, shore 50.		
Size of test sample	Window: 730 × 730mm, excluding width of seals		
Measured parameters	Sound transmission loss, R_i , for the whole window in 1/3-octave frequency bands. A subscript is used to identify the test method used, the intensity method. Weighted sound reduction index, R_w . This weighted index is a single value indicator of the transmission loss of the test specimen.		
Measurement methods	Tests were performed in accordance with ISO standard 15186-1, "Acoustics-Measurement of sound insulation in buildings and of building elements using sound intensity – Part 1: Laboratory measurements," (2000). Tests were performed at Ødegaard & Danneskiold-Samsøe A/S headquarters in Copenhagen, Denmark during July 2003 The test sample was mounted in an opening between a sending room and a receiving room. The sending room was a reverberation chamber of volume 66 m ³ . The sound transmission loss of the wall in-between the two chambers are much larger than that of the test sample. Inside the source room an amplified loudspeaker unit, Brüel & Kjær type 4224 was positioned. The sound source was driven with a pink noise signal generated the loudspeakers internal noise generator. The spatially and temporally averaged sound pressure level in the source room was measured with an integrating sound level meter , type Brüel & Kjær 2260.		

Measurement methods

The noise transmitted through the test sample to the receiving room was measured using the intensity technique. The sound intensity transmitted through the door was measured using the sound level meter type B&K 2260 with a intensity probe set type 2683, fitted with a 12 mm spacer.

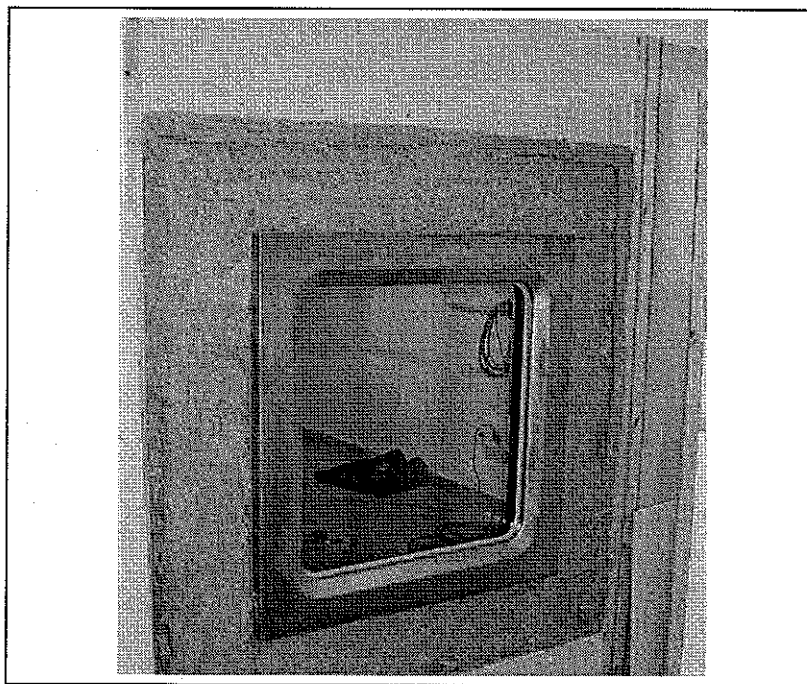
The measured sound levels were transferred to a PC for analysis. The reported sound reduction indices are calculated as described in ISO 717-1, "Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation," (1996).

Mounting of test sample

The window construction is mounted in a test opening with dimension 1500x1500 mm. The window panes was mounted against a steel frame that was constructed to provide the same spacing, and contact area with the edge seals, as would occur in practice. That is to say, the frame replicates the geometry of steel window frame mounted in a ship or a rig.

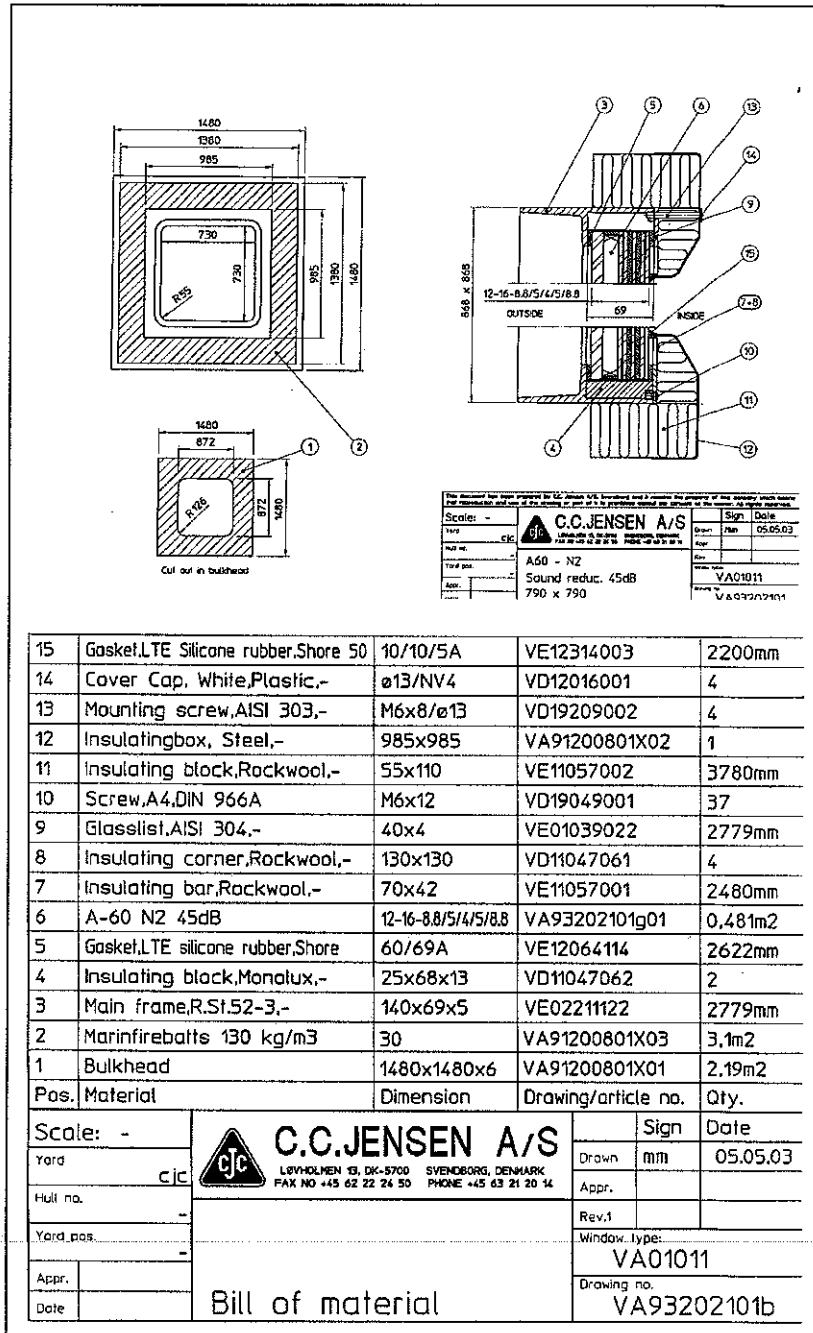
The steel frame was mounted in position in the opening with screws.

Mounting of tested object

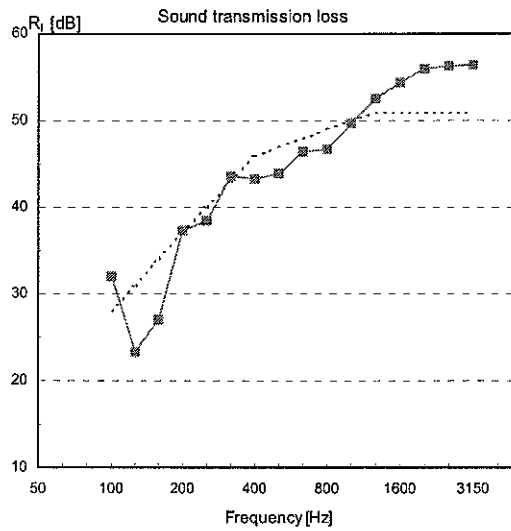


Window mounted in the test opening seen from the receiving room.

Description of the test window construction



Measured sound transmission loss R



Hz	dB
50	34.0
63	32.7
80	28.6
100	32.1
125	23.3
160	27.0
200	37.4
250	38.5
315	43.5
400	43.2
500	43.9
630	46.4
800	46.8
1000	49.6
1250	52.5
1600	54.4
2000	56.0
2500	56.2
3150	56.4
4000	60.5
5000	64.9
R _{i,w}	47

The single number quantity for the sound transmission loss is calculated, as described in ISO 717-1, to be:

$$R_{i,w} = 47 \text{ dB}$$