

Ødegaard & Danneskiold-Samsøe A/S

Consulting Engineers - Noise and vibration control

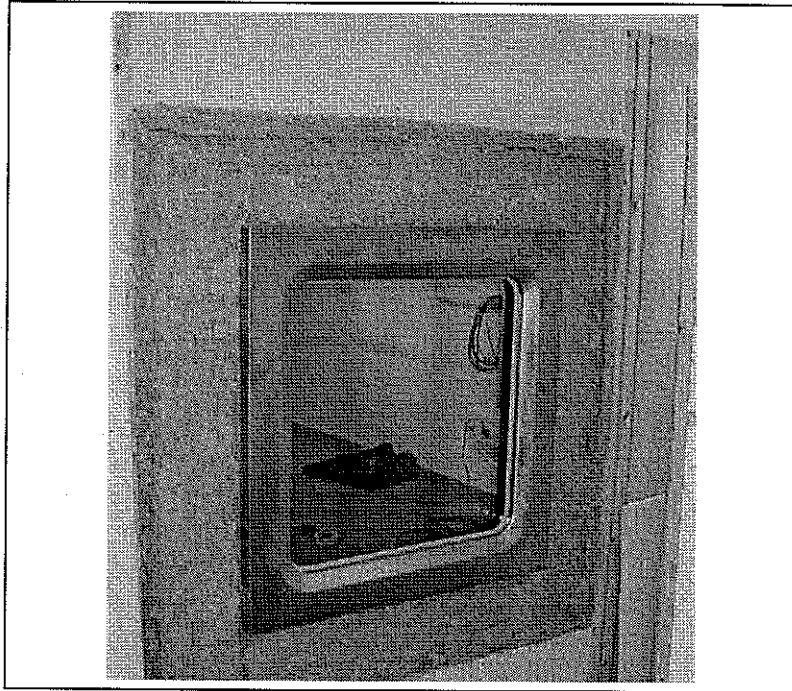
Sound Insulation Sheet

Description	A60-N2 50 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 12-16-8.8-16-8.8/5/4/5/8.8 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 test opening seen from the receiving room.

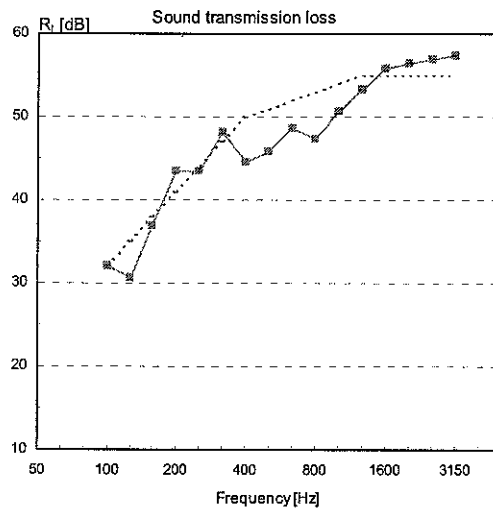
Description of the test window construction

Pos.	Material	Dimension	Drawing/article no.	Qty.
16	Gasket,LTE Silicone rubber,Shore 50	10/10/5A	VE12314003	2920mm
15	Inlay profile,R.St.37-2,-	25x25	VE01021006	3425mm
14	Cover Cap. White,Plastic,-	ø13/NV4	VD12016001	4
13	Mounting screw,AISI 303,-	M6x8/ø13	VD19209002	4
12	Insulatingbox, Steel,-	985x985	VA91200801X02	1
11	Insulating block,Rockwool,-	55x110	VE11057002	4000mm ²
10	Screw,A4,DIN 966A	M6x12	VD19049001	47
9	Glasslist,AISI 304,-	40x4	VE01039022	3425mm
8	Insulating corner,Rackwool,-	130x130/R	VD11047061	4
7	Insulating bar,Rackwool,-	70x42	VE11057001	2700mm
6	A-60 N2 50dB	12-16-8-8-16-8-5,5/4/5/8,8	VA93202201g01	0,481m ²
5	Gasket,LTE silicone rubber,Shore	66/74A	VE12064115	3333mm
4	Insulator,Monolux,-	25x47x8	VD11047054	2
3	Flat bar,R.St.37-2,-	140x12	VE01031033	3425mm
2	Marinfireballs 130 kg/m ³	30	VA91200801X03	3,1m ²
1	Bulkhead	1480x1480x6	VA91200801X01	2,19m ²

Scale: -	C.C.JENSEN A/S LØVHOLJEN 13, DK-8700 SVENDBORG, DENMARK FAX NO +45 62 22 24 58 PHONE +45 63 21 20 14	Sign	Date	
Yard		Drawn	mm	24.04.03
Hull no.		Appr.		
Yard pos.		Rev.1		
Appr.		Window type:	VA01011	
Date	Drawing no.	VA93202201b		

Bill of material

Measured sound transmission loss R



Hz	dB
50	32.2
63	38.2
80	31.0
100	32.1
125	30.6
160	36.9
200	43.5
250	43.5
315	48.1
400	44.5
500	45.8
630	48.6
800	47.4
1000	50.7
1250	53.3
1600	55.7
2000	56.4
2500	56.9
3150	57.4
4000	62.0
5000	66.3
$R_{i,w}$	51

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

$$R_{i,w} = 51 \text{ dB}$$