Evidence of Performance

Airborne sound insulation of building elements

Test report 164 35928/1e

This test report is a translation of test report 164 35928/1 dated 22 August 2008

Client **Renson Ventilation NV**
Industriezone 2 Vijverdam Maalbeekstraat 10

8790 Waregem
Belgium

Product	Ventilation grille with sound-absorbing slats
System designation	Typ 445/86
Size (w × h)	1230 mm × 1480 mm
Material	Aluminium
Orientation	Sound absorbing element facing noise side
Special features	-/-

Weighted sound reduction index R_w
Spectrum adaptation terms C and C_{tr}

$$R_w\ (C;\ C_{tr}) = 6\ (-1;-2)\ \text{dB}$$

ift Rosenheim
01. October 2008

Dr. Joachim Hessinger, Dipl.-Phys.
Head of Testing Department
ift Centre for Acoustics

Bernd Saß, Dipl.-Ing. (FH)
Assistant Head of Testing Department
ift Centre for Acoustics

Technical basis

EN ISO 140-1:1997+A1:2004
EN 20140-3 :1995+A1:2004
EN ISO 717-1 : 1996+A1:2006

Representation

Instructions for use

This test report may be used to classify the sound insulation of building elements

Validity

The data and results given relate solely to the tested and described specimen

Testing the sound insulation does not allow any statement to be made on further characteristics of the present structure regarding performance and quality.

Notes on publication

The **ift** Guidance Sheet "Conditions and Guidance for the Use of **ift** Test Documents" applies.

The cover sheet can be used as abstract.

Contents

The test report contains a total of 7 pages

LSW - Labor für Schall- und Wärmemesstechnik GmbH
– das Schallschutzprüfzentrum des **ift** Rosenheim

Geschäftsführer:
Dr. Jochen Peichl
Ulrich Sieberath

Lackermannweg 26
D-83071 Stephanskirchen

Tel. +49 (0)8036/3006-0
Fax: +49 (0)8036/3006-33
www.lsw-gmbh.de

Sitz: 83026 Rosenheim
AG Traunstein, HRB 14821

Sparkasse Rosenheim
Kto. 500 434 626
BLZ 711 500 00

Notified Body Nr.: 0757
Anerkannte PÜZ-Stelle: BAY 18
DAP-PL-0808.99
Sachverständige Prüfstelle Gruppe I
für Eignungs- und Güteprüfung DIN 4109

1 Object

1.1 Description of test specimen

Product	Ventilation grille with sound-absorbing slats
System designation	Typ 445/86
Orientation	Sound absorbing element facing noise side
Mass of the Element	24.4 kg
Area related mass	13.4 kg/m²
External dimensions (w x h)	1230 mm × 1480 mm
Total thickness	86 mm
Material	Aluminium-sheet 1.5 mm
Slats	
Quantity	23
Structure	aluminium sheet slats, filled with mineral fibre, bottom with perforated sheet
Total thickness of the lamella	20 mm
Free slat distance	20 mm
View of slat distance	60 mm

The description is based on inspection of the test specimen at the **ift** Centre for Acoustics. Article designations / numbers as well as material specifications have been provided by the client. (Further manufacturer data are marked with *))

1.2 Mounting of the test specimen

Test rig	Window test rig with suppressed flanking transmission acc. to EN ISO 140-1; the test rig with 5 cm continuous acoustic break which is sealed in the test opening with plastic sealant.
Mounting of the object	Mounting by ift Centre for Acoustic and staff of the client.
Mounting conditions	Mounting in test opening, connecting joints foamed and sealed on both sides by application of elastic sealant
Mounting position:	Externally flush in test opening.
Orientation:	Absorbing reveal facing source room side (noise side)
Preparation	No special preparation required.

1.3 Representation of the test specimen

The structural details were examined solely on the basis of the characteristics to be classified. Illustrations are based on unchanged documentation provided by the client.

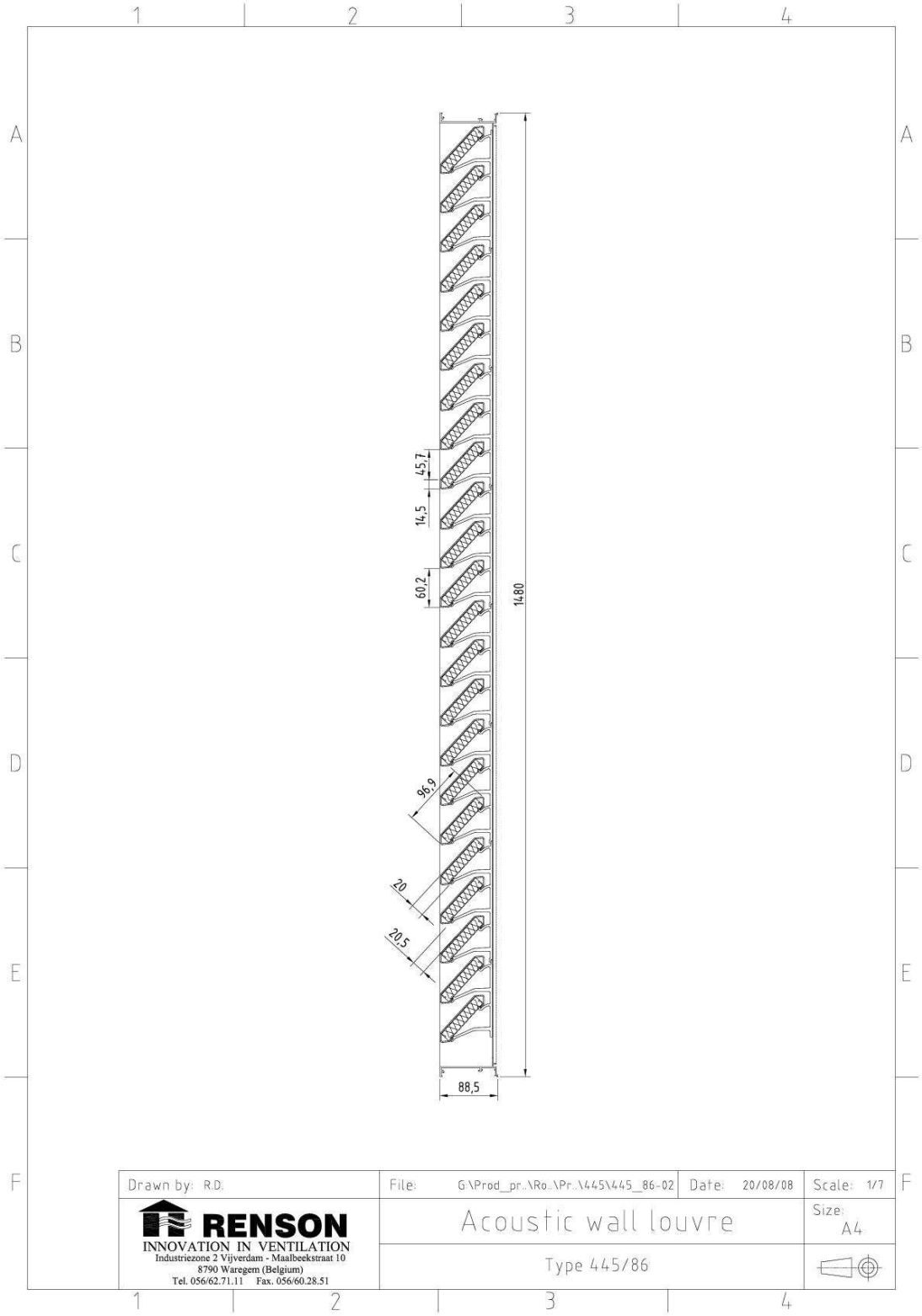


Fig 1 Vertical cross-section

Receiving room

Emission room

Fig 2 Photography of the mounted element, taken by ift Centre for Acoustic

2 Procedure

2.1 Sampling

Sampling	The test specimen were selected by the client.
No. of specimen	1
Manufacturer*	Renson B.V.
Manufacturing plant*	Renson B.V.
Date of manufacture / date of sampling*	05/08
Production-line*	Renson B.V.
Delivery at **ift**	16. May 2008 by client via forwarding agency
ift- Registration	23853/1

2.2 Process

Technical basis

EN ISO 140-1:1997 + A1:2004 Acoustics; Measurement of sound insulation in buildings and of building elements - Part 1: Requirements for laboratory test facilities with suppressed flanking transmission

EN 20140-3:1995 + A1:2004 Acoustics; Measurement of sound insulation in buildings and of building elements - Part 3: Laboratory measurements of airborne sound insulation of building elements

EN ISO 717-1 : 1996 + A1:2006 Acoustics; Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

Corresponds to national german version:

DIN EN ISO 140-1:2005-03, DIN EN ISO 140-3:2005-03 and DIN EN ISO 717-1 : 2006-11

Boundary conditions	Up to the standard.
Deviation	No deviation to the test procedure.
Test noise	Pink noise
Measuring filter	one-third-octave band filter
Measurement limits	
Background noise level	The background noise level in the receiving room was determined during measurement and the receiving room level L_2 corrected by calculation as per DIN EN ISO 140-3 Clause 6.5.
Maximum sound insulation	Maximum sound insulation of the test set-up was at least 15 dB higher than the measured sound reduction index of the test specimen. Not corrected by calculation.
Measurement of reverberation time	arithmetical mean: two measurements each of 2 loudspeaker and 3 microphone positions (total of 12 independent measurements).
Measurement equation A	$A = 0{,}16 \cdot \frac{V}{T}$ m²
Measurement of sound level difference	Minimum of 2 loudspeaker positions and rotating microphones.
Measurement equation	$R = L_1 - L_2 + 10 \cdot \lg \frac{S}{A}$ dB

Key

A	equivalent absorption area in m²
L_1	Sound pressure level emission room in dB
L_2	Sound pressure level receiving room in dB
R	Sound reduction index in dB
T	Reverberation time in s
V	Volume of receiving room in m³
S	Testing area of the specimen in m²

2.3 Measuring and test equipment

Device	Type	Manufacturer
Integrating sound meter	Type Nortronic 840	Norsonic-Tippkemper
Microphone preamplifiers	Type 1201	Norsonic-Tippkemper
Microphone units	Type 1220	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Dodecahedron loudspeakers	Type 229, 96 Ohm	-
Amplifier	Type 235, 100 W	FG Elektronik
Rotating microphone boom	Type 231-N-360	Norsonic-Tippkemper

The ift Centre for Acoustic participates in comparative measurements at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig every three years, the last one was in January 2007. The sound level meter used, Series No. 17848 was calibrated by the Dortmund Eichamt (calibration agency) on 12 April 2006. The calibration is valid until 31 December 2008.

2.4 Testing

Date	21. May 2008
Test engineer	Bernd Saß

3 Detailed results

The values of the measured sound reduction index of the tested element are drawn-up in the diagram of the annexed data sheet as a function of the frequency and are given in a table.

As per EN ISO 717-1 for the frequency range 100 Hz to 3150 Hz the weighted sound reduction index R_w and the spectrum adaptation terms C and C_{tr} are calculated as follows

R_w (C;C_{tr}) = 6 (-1;-2) dB

As per EN ISO 717-1, additional spectrum adaptation terms are as follows:

$C_{50\text{-}3150}$ =	-1 dB	$C_{100\text{-}5000}$ =	0 dB	$C_{50\text{-}5000}$ =	0 dB
$C_{tr,50\text{-}3150}$ =	-2 dB	$C_{tr,100\text{-}5000}$ =	-2 dB	$C_{tr,50\text{-}5000}$ =	-2 dB

Upon request by the client and in deviation from the evaluation method set out by EN ISO 717-1 the weighted sound reduction index R_w was additionally evaluated at first in steps of 1/10 dB; the result obtained from 1/10 dB steps is marked with * and is:

R_w* = 6.2 dB

ift Rosenheim
Centre for Acoustics
01. October 2008

Sound reduction index according to ISO 140 - 3

Laboratory measurement of airborne sound insulation of building elements

Client: Renson Ventilation NV, B-8790 Waregem

System designation Typ 445/86

ROSENHEIM

Design of test specimen

Ventilation grille with sound-absorbing slats

Outside dimension	1230 mm × 1480 mm
Total thickness	86 mm
Area related mass	13.4 kg/m²
Material	Aluminium
Orientation	Sound absorbing element facing noise side

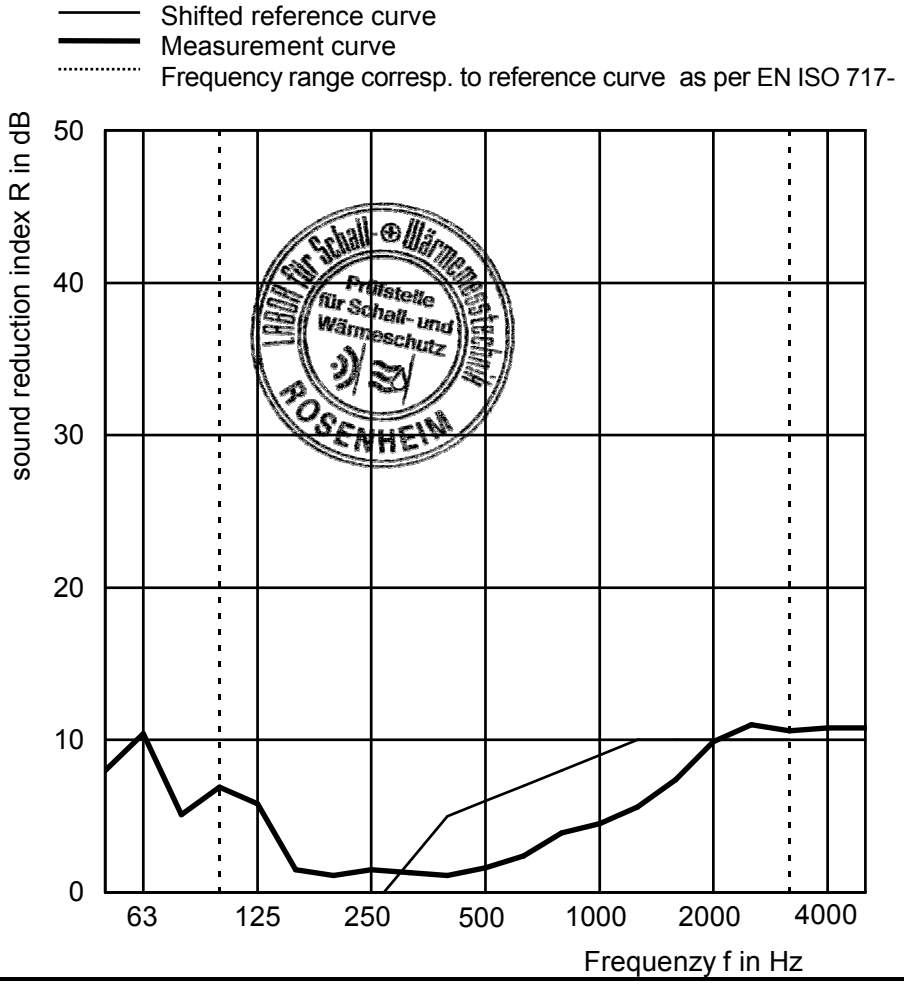
Test date	21. May 2008
Test opening S	1.25 m × 1.50 m = 1.88 m^2
Test rig	acc. to EN ISO 140-1
Partition wall	Double-leaf concrete wall
Test noise	pink noise
Volumes of test rooms	V_S = 109.9 m^3 V_E = 101.3 m^3

Maximum sound insulation
$R_{w,max}$ = 62 dB (related to test area)

Mounting conditions
Specimen externally flush-mounted in test opening and fixed by wedges. Connection joints filled with foam and sealed with elastic sealants on both sides

Climate in the test rooms 20 °C / 50 % RF

f in Hz	R in dB
50	8.0
63	10.4
80	5.1
100	6.9
125	5.8
160	1.5
200	1.1
250	1.5
315	1.3
400	1.1
500	1.6
630	2.4
800	3.9
1000	4.5
1250	5.6
1600	7.4
2000	9.9
2500	11.0
3150	10.6
4000	10.8
5000	10.8



Rating according to EN ISO 717-1 (in third octave bands):

R_w ($C;C_{tr}$) = 6 (-1;-2) dB $C_{50\text{-}3150}$ = -1 dB; $C_{100\text{-}5000}$ = 0 dB; $C_{50\text{-}5000}$ = 0 dB

$C_{tr,50\text{-}3150}$ = -2 dB; $C_{tr,100\text{-}5000}$ = -2 dB; $C_{tr,50\text{-}5000}$ = -2 dB

ift Rosenheim
Centre for acoustics
1. October 2008

Dr. Joachim Hessinger, Dipl.-Phys.
Head of Testing Department