

# Verification

## Joint sound insulation of fillers Test report

167 42377



Client **fischerwerke GmbH & Co. KG**  
**Otto-Hahn-Str. 15**  
  
**79211 Denzlingen**

Product	<b>1-K Pistolenschaum</b>
	<b>fischer Pistolenschaum PUP 750 B3</b>
	<b>fischer Gun Foam PUP 750 B3</b>
	<b>fischer Espuma Poliuretano Profesional</b>
Name	<b>Pistola</b>
Raw density	<b>21 g/l</b>
Special features	<b>-/-</b>

### Fundamentals

ift Guideline SC-01  
"Determination of the joint sound insulation index" 2002  
This test report is a transcription of test report no. 167 41043 dated 4 January 2006 for the new client and their product designation of the tested item. The manufacturer is registered with the ift under no. 7034221.

### Description



### Instructions for use

The method is suitable for comparing construction products for sealing (e.g. seals, fillers for sealing joints). The measurement results can be used to estimate the transmission coefficient  $\tau_{e,in}$  accordance with EN 12354-3 Annex B. However, the mathematical consideration of joint sound insulation in determining the overall sound insulation does not replace the verification of an overall construction.

### Validity

The data and results quoted refer exclusively to the tested and described test specimens. The sound insulation test does not allow any conclusions to be drawn about other performance and quality-determining properties of the construction in question. properties of the construction in question.

### Publication information

The ift information sheet "Conditions and notes on the use of ift test documentation" applies. The cover sheet can be used as a summary.

### Contents

The test report comprises a total of 8 pages.  
1 Subject  
2 Implementation  
3 Individual results  
4 Instructions for use  
Measurement sheet (2 pages)



Rated joint sound insulation measure  $R_{ST,w}$   
Spectrum adaptation values  $C$  and  $C_{tr}$

10 mm:  $R_{ST,w} (C; C_{tr}) = 60 (-1; -4)$  dB  
20 mm:  $R_{ST,w} (C; C_{tr}) = 60 (-1; -4)$  dB

Determined for 10 and 20 mm joint width

ift Rosenheim  
13 January 2010

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Internal translation

## 1 Subject

### 1.1 Test specimen description

product	1-component gun foam
Preparation of test specimens	3 July 2009
Product name	fischer Pistolenschaum PUP 750 B3 fischer Gun Foam PUP 750 B3 fischer Espuma Poliuretano Profesional Pistola
Dimensions	
Joint length $l$	1200 mm
Joint depth $t$	100 mm
Joint width $b$	10 mm and 20 mm (nominal dimension)
Joint cover	Without cover, foam cut off
Curing time	11 days
Bulk density	21 g/l (average value from two foamed samples)

The description is based on the examination of the test specimen at ift. Item descriptions/numbers and material specifications are provided by the original client. (Additional manufacturer information is marked with \*).

### 1.2 Installation in the test bench

The joint sound insulation index  $R_{ST}$  was measured using a mobile joint measuring device (see Figures 1 and 2). This mobile measuring device consists of a high sound insulation installation element made of metal profiles and bonded sheet metal with insert cassettes; the profiles of the insert cassettes are filled with sand. A wide variety of joints with variable joint widths can be represented in the insert cassettes (Figure 1).

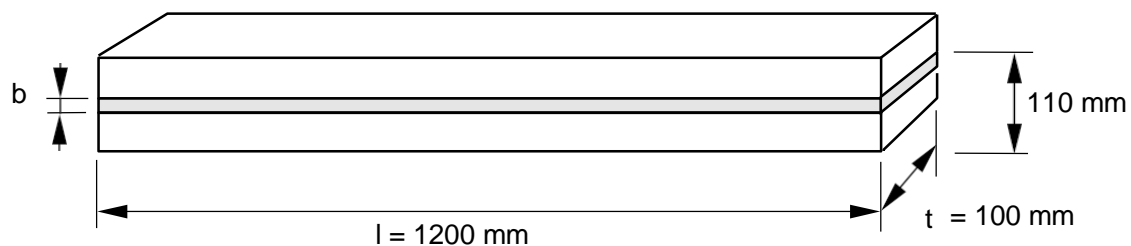


Figure 1 Insert cassettes

These insert cassettes were manufactured by the ift Sound Insulation Centre 11 days before the test date using the filler to be tested in accordance with the manufacturer's specifications. After hardening, the filler was cut off and the cassettes were installed in the high-sound-insulating frame (Figure 2), which was mounted in the test opening in the partition wall of the window test bench (Z-wall) in accordance with EN ISO 140-1: 2005-03. The connecting joints to the test opening were filled with foam and sealed on both sides with elastic sealant.

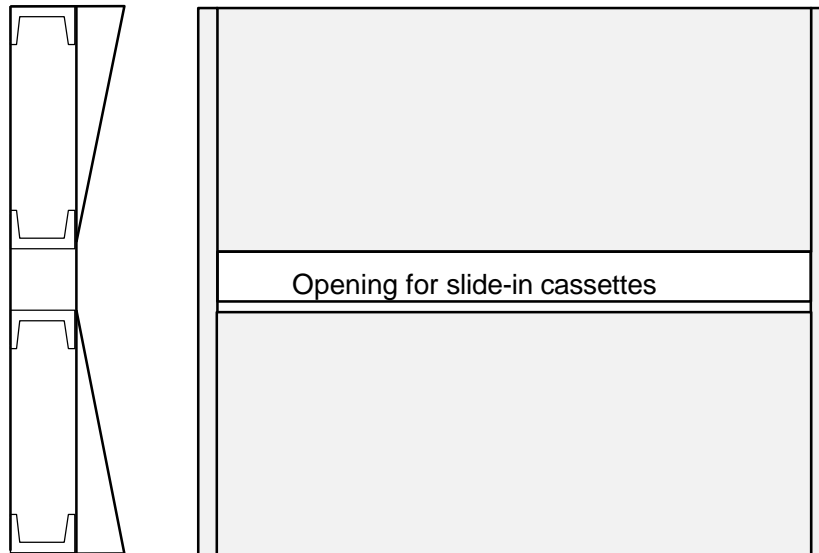


Image 2 Joint test bench arrangement (high sound insulation element)

## 2 Implementation

### 2.1 Sampling

Sample selection	The samples were selected by the original client. . The insert cassettes were filled with the filling material to be tested by the ift Schallschutzzentrum in accordance with the manufacturer's instructions.
Number	1
Manufacturer	The manufacturer is registered with the ift under No. 7034221.
Date of manufacture	18 June 2009
Marking	5076 00495 MS Prod. 25 June 2009
Delivery to ift	1 July 2009 by the original client
ift registration number	26219

### 2.2 Procedure

Fundamentals	ift Guideline SC-01/2:2002-09 "Determination of the sound insulation index"
Boundary conditions	Correspond to the information in the guideline.
Deviation	There are no deviations from the test procedure or the test conditions.
Test noise	Pink noise

### Internal translation

Measurement filter

Third octave band filter

Internal translation



### Measurement limits

**External noise level** The external noise level in the reception room was determined during the and the reception room level  $L_2$  was corrected mathematically in accordance with EN 20140-3:1995 + A1:2004 Section 6.5.

**Maximum insulation** The maximum insulation of the test setup is in the range of the measurement results. The measurement results therefore represent minimum values. No mathematical correction was made using the maximum insulation.

**Measurement of reverberation time** Arithmetic mean: 2 measurements each from 2 loudspeaker speaker and 3 microphone positions (12 measurements in total).

**Measurement equation A** 
$$A = 0.16 \frac{V}{T} \text{m}^2$$

**Measurement of the sound level difference** At least 2 loudspeaker positions and microphones moving in circular paths

**Measurement equation** 
$$R_{ST} = L_1 - L_2 + 10 \log \frac{S_N}{A} \text{ dB}$$

- KEY**
- $R_{ST}$  Joint sound insulation measure in dB
  - $L_1$  Sound level in the transmitter room in dB
  - $L_2$  Sound level in the receiving room in dB
  - $A$  Equivalent absorption area in  $\text{m}^2$
  - $V$  Volume of the receiving room in  $\text{m}^3$
  - $T$  Reverberation time in s
  - $S_N$  Reference area (1  $\text{m}^2$ )
  - $l_N$  Reference length (1 m)

The joint sound insulation index is comparable to a sound insulation index that has a component area in which there is a 1 m long joint per  $\text{m}^2$  of area, whereby sound transmission only occurs via the joint.

If the joint is combined with a component (e.g. a window with an area  $S$  and a sound insulation measure  $R$ ) and it is assumed that the component area  $S \gg$  is greater than the opening area of the joint ( $b \cdot l$ ,  $b$  = joint width), the resulting sound insulation measure  $R_{res}$  according to the relationship:

$$R_{res} = -10 \log_{10} \left( 10^{-\frac{R}{10}} + \frac{S}{10} 10^{-\frac{R_{ST}}{10}} \right) \text{ dB}$$

### 2.3 Test procedure

Date 14 July 2009  
 Test engineer Bernd Saß

## 2.4 Test equipment

Device	Type	Manufacturer
Integrating measuring system	Type Nortronic 840	Norsonic-Tippkemper
Microphone preamplifier	Type 1201	Norsonic-Tippkemper
Microphone capsules	Type 1220	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Speaker Dodecahedron	Homemade	-
Amplifier	Type E120	FG Elektronik
Microphone swivel system	Homemade / Type 231-N-360	Norsonic-Tippkemper

Every three years, the ift Sound Insulation Centre participates in comparative measurements at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig, most recently in January 2007. The sound level meter used, serial no. 24842, was calibrated by the Dortmund Calibration Office on 16 September 2008. The calibration is valid until 31 December 2010.

## 3 Individual results

The values of the measured joint sound insulation index  $R_{ST}$  of the tested filler are plotted in a diagram in the attached measurement sheets (appendix) as a function of frequency. This is used to calculate the rated joint sound insulation index  $R_{ST,w}(C;C_{tr})$ , based on a joint length  $l = 1.20$  m, in accordance with EN ISO 717-1 for the frequency range 100 Hz to 3150 Hz.

The maximum sound insulation of the test arrangement (based on  $l = 1.20$  m) was also plotted in the curve diagram with a rated maximum sound insulation value  $R_{ST,wmax}(C;C_{tr}) = 62$  (-2;-5) dB.

The joint sound insulation measures determined are in the range of maximum sound insulation; in these cases, the values determined in this way are minimum values. No mathematical correction of the maximum insulation was made. The rated joint sound insulation measures for the various joint arrangements are shown in Table 1.

Table 1 Measurement results, joint depth  $t = 100$  mm

Evaluated joint sound insulation measure $R_{ST,w}(C;C_{tr})$ in dB	Type of measures, comments
62 (-2;-5)	Maximum insulation
60 (-1;-4)	Joint width 10 mm, filled with fischer Pistolenschaum PUP 750 B3 fischer Gun Foam PUP 750 B3 fischer Espuma Poliuretano Profesional Pistola
60 (-1;-4)	Joint width 20 mm, filled with fischer Pistolenschaum PUP 750 B3 fischer Gun Foam PUP 750 B3 fischer Espuma Poliuretano Profesional Pistola

## 4 Instructions for use

### General information:

The method is suitable for comparing construction products for sealing (e.g. seals, fillers for sealing joints). The measurement results can be used to estimate the transmission coefficient  $\tau_e$  in accordance with EN 12354-3 Annex B. However, the mathematical consideration of joint sound insulation when determining the overall sound insulation does not replace the verification of an overall construction.

For practical cases, i.e. the combination of the sound insulation of a window with joint sound insulation in a specific window recess, it should be noted that

- a) for physical reasons, the joint sound insulation value must be corrected by approximately – 3 dB in the area of corners and edges;
- b) The actual thickness of the window frame profile (joint depth t) must be adjusted, resulting in a correction of –1 dB to –2 dB.
- c) Experience has shown that the filling in specific window recesses and corners results in weak points in corners and areas that are difficult to access.

As a result, the measured joint sound insulation values for practical application

- a) either be corrected by –4 dB or
- b) increased by additional sealing with pre-compressed sealing tape with or without reinforcement or elastic sealant with backfill cord.

### Note on the transfer of measurement results

Based on the laboratory testing experience of the ift Sound Testing Centre, for a window with an area of 1.82 m<sup>2</sup> and a completely filled construction joint without additional sealing with a joint length  $l = 5.5$  m (laboratory conditions), sound insulation values of the window  $R_{w,Fe} \geq 40$  dB, the following reduction must be calculated:

$$R_{w,res} = R_{w,Fe} - 2 \text{ dB.}$$

The correction of –2 dB can be omitted if additional sealing is provided on both sides.

For windows with  $R_{w,Fe} \geq 48$  dB, higher reductions must be calculated.

ift Rosenheim Sound Insulation Centre  
13 January 2010

# Joint sound insulation measure according to ift guideline SC-01

Determination of the joint sound insulation measure

Client: fischerwerke GmbH & Co. KG, 79211 Denzlingen

Product name            fischer Pistolenschaum PUP 750 B3  
                                  fischer Gun Foam PUP 750 B3  
                                  fischer Espuma Poliuretano Profesional Pistola



Structure of the test specimen

1-component gun foam

joint geometry

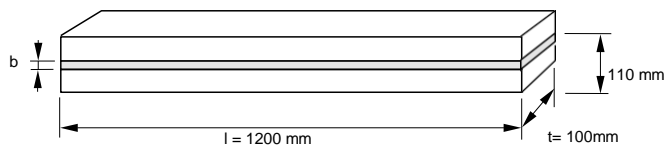
length l                    1200mm

depth d                    100mm

Width b                    10 mm

Bulk density              21 g/l

sketch of the measurement setup



Test date                14 July 2009

Test length l            1.2 m

Test bench partition Double concrete wall,  
insert frame

Test sound              Pink noise

Volumes of test rooms             $V_S = 104 \text{ m}^3$

$V_E = 67.5 \text{ m}^3$

Maximum joint sound insulation value

$R_{ST,w,max} = 62 \text{ dB}$  (based on the test length)

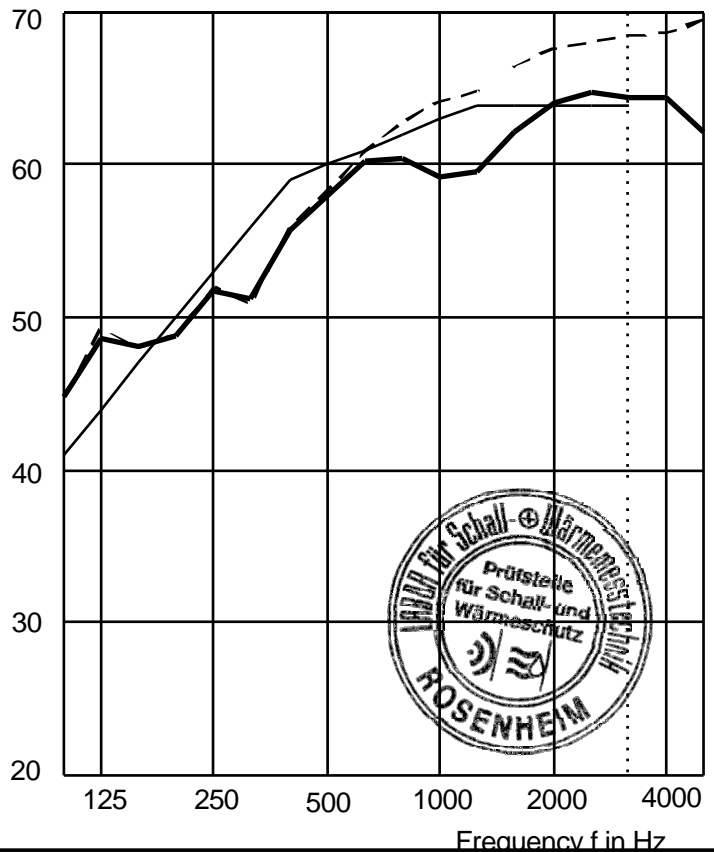
Installation conditions

Installation of the cassette in a  
high sound insulation element.

Climate in the test rooms  $22 \text{ }^\circ\text{C} / 75 \text{ \% RH}$

f in Hz	$R_{ST}$ in dB
100	44.8
125	48.6
160	48.2
200	48.9
250	51.7
315	51.2
400	55.7
500	58.1
630	60.3
800	60.5
1000	59.3
1250	59.5
1600	62.1
2000	64.1
2500	64.7
3150	64.5
4000	64.5
5000	62.1

— Shifted reference curve  
 — Measurement curve      Maximum joint sound insulation  
 - - - Frequency range corresponding to the reference curve according  
 to EN ISO 717-1



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

$R_{ST,w} (C; C_{tr}) = 60 (-1; -4) \text{ dB}$      $C_{100-5000} = 0 \text{ dB}$ ;  $C_{tr,100-5000} = -4 \text{ dB}$

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Measurement sheet 1 (protocol Z2)

ift Rosenheim

Soundproofing Centre

13 January 2010

Dr Joachim Hessinger, Dipl.-Phys.  
 Test Centre Manager

