Evidence of Performance

Airborne sound insulation of fire protection products

Test Report
23-002208-PR01

(PB 01-H07-04-en-01)

Client	Hilti Entwicklungsgesellschaft mbH Hiltistr. 6 86916 Kaufering Germany
Product	Firestop board
Designation	Hilti Firestop Board CFS-CT HDB
Material	Mineral wool with firestop coating
Drywall-Unit	2 × 12.5 mm gypsum board 1 metal frame 50 mm 2 × 12.5 mm gypsum board 40 mm mineral fibre insulation in cavity
Dimensions of the firestop board	Dimensions 590 mm × 495 mm mm, thickness 60 mm
Special features	3 variants with firestop board in drywall unit

Weighted normalized sound level difference of small building components $D_{n,e,w}$
Weighted sound reduction index R_w
Spectrum adaptation terms C and C_{tr}

$D_{n,e,w}\ (C;\ C_{tr})$
$R_w\ (C;\ C_{tr})$
according to Table 1

ift Rosenheim
10.10.2023

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Operating Testing Officer
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Basis

EN ISO 10140-1: 2021
EN ISO 10140-2: 2021
EN ISO 717-1: 2020

ASTM E 90-09
ASTM E 413-22

Representation

Instructions for use

This test report serves to document the sound insulation of fire protection products.

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 any further characteristics of the present construction regarding performance and quality.

Notes on publication

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

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1 Object
2 Procedure
3 Detailed results
4 Instructions for use

Data sheets (7 pages)

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1 Object

1.1 Description of test specimen

Product	Firestop board
Product designation	Hilti Firestop Board CFS-CT HDB
Material*	Mineral wool with firestop coating Hilti CFS-CT 0,7 mm
Thickness	60 mm
Dimensions (w × h)	590 mm × 495 mm
Mass of the specimen	3.4 kg (for firestop board)
Density	160 kg/m³ (for firestop board)
Sealing	
Designation	Hilti Firestop Sealant CFS-CFS-S ACR
Material*	Intumescent acrylic sealant
Drywall - unit	
Manufacturer*	Insert unit (consisting of steel stud stubs) prepared and installed by the ift
Dimensions (W x H)	1,230 mm × 1,480 mm
Total thickness	100 mm
Construction	2 × 12.5 mm gypsum board 50 mm CW profile, partial mineral fibre insulation 40 mm 2 × 12.5 mm gypsum board
Stud framing	1 metal stud made of 50 mm CW profile
Cladding	gypsum board, „Knauf Diamant GKF 12,5“, screw-fastened
Insulation of cavity	mineral fibre insulation 40 mm
Reveal	boarded with gypsum board, „Knauf Diamant GKF 12,5“
Test variants:	
Variant 1	
(measurement protocol A_{max})	Drywall unit without wall opening and firestop board
Variant 2	
(measurement protocol A01)	Drywall unit with wall opening filled with firestop board
Wall opening in drywall unit	600 mm × 500 mm
Variant 3	
(measurement protocol A02)	Drywall unit with wall opening filled with firestop board
Wall opening in drywall unit	600 mm × 500 mm
Additional measure	Firestop board cut apart in the middle and mounted butt jointed
Variant 4	
(measurement protocol A03)	Drywall unit with wall opening filled with 2 firestop boards
Wall opening in drywall unit	600 mm × 500 mm
Additional measure	2 firestop boards mounted in wall opening, 10 mm protrusion on each side

The description is based on inspection of the test specimen at the **ift** Laboratory for Building Acoustics. Item designations / numbers as well as material specifications were provided by the client. Additional data provided by the client are marked with *.

1.2 Mounting to test rig

Test rig	Window test rig “A-Wand” with suppressed flanking transmission according to EN ISO 10140-5; the test rig includes a insert frame with an acoustic break which is sealed in the test opening with closed-cell permanently resilient sealant.
Mounting of test specimen	Test specimen mounted by employees of the customer and workman of ift Laboratory for Building Acoustics.
Mounting conditions	Mounting the drywall unit in test opening, sealed on both sides with plastic sealant. The drywall was mounted by ift Laboratory for Building Acoustics
Special features	Variant 2 and 3: The firestop board was flush mounted to the sending room. Variant 4: 2 firestop boards were mounted with 10 mm protrusion on each side.

1.3 Representation of test specimen

The constructional details were inspected solely on the basis of the characteristics to be classified. The illustrations are based on unchanged documentation provided by the client. Pictures were taken during testing series.

view from sending room

view from receiving room

Fig. 1 drywall insert unit with firestop board

2 Procedure

2.1 Sampling

Selection of test specimen	The test specimen were selected by the client.
Number	2 pieces firestop boards with additional equipment
Manufacturer	Hilti Entwicklungsgesellschaft mbH,
Manufacturing plant	Hilti Werk 4a, 86916 Kaufering (Germany)
Date of manufacture / date of sampling	July 2023
Responsible for sampling	Mr. Peter Schulze
Delivery at **ift**	17.07.2023 by the client
ift registration number	59001

2.2 Methods

Basis

EN ISO 10140-1: 2021	Acoustics; Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1: 2021)
EN ISO 10140-2:2021	Acoustics; Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2021)
EN ISO 717-1: 2020	Acoustics; Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:2020)

Corresponds to the national German standard/s:
DIN EN ISO 10140-1: 2021-09, DIN EN ISO 10140-2:2021-09 and
DIN EN ISO 717-1 : 2021-05

Additional basis

ASTM E 90-09	Standard test method for laboratory measurement of airborne sound transmission loss of building partitions and elements
ASTM E 413-22	Classification for rating sound insulation

Procedure and scope of measurement are in conformity with the principles of the Working Group of sound insulation testing bodies approved by the national building control authorities in cooperation with the standardization committee NA 005-55-75-AA (subcommittee UA 1 - DIN 4109).

Boundary conditions	As per standard specifications in EN ISO 10140. Upon request by the client additional evaluations of the STC were carried out in accordance with ASTM E 413-10. Evaluation of STC was based on test results from measurements as per EN ISO 10140-2.
Deviations	There were no deviations from the test method / test conditions set out in EN ISO 10140. The linear flow resistance of the insulating material was not determined.
Test noise	Pink noise
Measuring filter	One-third-octave band filter
Measurement limits	
Low frequencies	The test rooms fulfill the recommended dimensions for testing in the frequency range from 50 Hz to 80 Hz as per EN ISO 10140-4 Annex A (informative). A moving loudspeaker was used.

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 EN ISO 10140-4 Clause 4.3.
Maximum sound insulation	For the declaration of the normalized sound level difference of the opening with mounted firestop board the test result for the dry wall unit without the opening serves as maximum sound insulation for the test setup. In terms of a weighted sound reduction index it was evaluated as $R_{w,max}$ = 51 dB. The difference between sound insulation of the test specimen (normalized level difference of firestop board) and maximum sound insulation of the test setup was at least more than 15 dB. It was not corrected by calculation
Measurement of reverberation time	Arithmetical mean: two measurements each of 2 loudspeaker and 3 microphone positions (a 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	$R = L_1 - L_2 + 10 \cdot \lg \frac{S}{A}$ dB
Measurement equation $D_{n,e}$	$D_{n,e} = L_1 - L_2 + 10 \cdot \lg \frac{A_0}{A}$ dB

KEY

A	Equivalent absorption area in m²
R	Sound reduction index in dB
$D_{n,e}$	normalized sound level difference of small building components in dB
L_1	Sound pressure level source room in dB
L_2	Sound pressure level receiving room in dB
T	Reverberation time in s
V	Volume of receiving room in m³
S	area of wall element in m² (here 1.88 m²)
A_0	Reference absorption area = 10 m²

2.3 Test equipment

Device	Type	Manufacturer
Integrating sound meter	Type Nortronic 121	Norsonic-Tippkemper
Microphone preamplifiers	Type 1201	Norsonic-Tippkemper
Microphone unit	Type 1220	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Dodecahedron loudspeakers	Own construction	-
Amplifier	Type E120	FG-Elektronik
Rotating microphone boom	Type Nor 269	Norsonic-Tippkemper

The ift Laboratory for Building Acoustics participates in comparative measurements at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig every three years, the last one was in May 2022. The sound level meter used, Series No. 31423, was DKD calibrated by the company Norsonic Tippkemper (DKD - Deutscher Kalibrierdienst “German Calibration Service”) on 13.06.2023.

2.4 Procedure

Date	13. and 17. July 2023
Operating testing officer	Florian Dangl

3 Detailed results

The values of the normalized sound level difference of small building components for the tested elements are plotted against frequency in the enclosed data sheets and displayed in a table.
As per EN ISO 717-1 the weighted normalized sound level difference $D_{n,e,w}$ and the spectrum adaptation terms C und C_{tr} for the frequency range 100 Hz to 3150 Hz are obtained by calculation according to table 1. The weighted sound reduction index R_w for the complete wall section was evaluated at the request of the client as well as the Sound Transmission Class STC for the frequency range from 125 Hz to 4000 Hz according to ASTM E 413-22, they are also included in the table. The STC was evaluated on the basis of the sound reduction indices R, which were measured according to EN ISO 10140 (sound reduction index R was evaluated with the area S = 1,88 m² representing the complete wall section in the test opening).

Table 1 Results of sound insulation tests: weighted normalized sound level difference and weighted sound reduction index

Data sheet No.	protocol No.	Tested variant	$D_{n,e,w}$ (C;C_{tr}) in dB	R_w (C;C_{tr}) in dB	STC
1	A_{Wall}	Variant 1: Drywall unit without wall opening and firestop board		51 (-3;-10)	51
2	A01D	Variant 2: with wall opening and firestop board	37 (-3;-4)		
3	A01			30 (-3; -4)	25
4	A02D	Variant 3: with wall opening and firestop board cut apart in the middle	37 (-2;-3)		
5	A02			30 (-2;-3)	26
6	A03D	Variant 4: with wall opening and 2 firestop boards	42 (-2;-4)		
7	A03			35 (-2;-4)	31

4 Instructions for use

4.1 Application for DIN 4109

Results given in this test report do not serve as evidence of suitability for verification of compliance with the requirements given in DIN 4109-1. They are no input data for the evidence calculation as per DIN 4109-2.

4.2 Uncertainty of measurement, single number ratings in $^1/_{10}$ dB

Basis

EN ISO 12999-1: 2020 — Acoustics; Determination and application of measurement uncertainties in building acoustics, Part 1: sound insulation (ISO 12999-1: 2020)

The weighted normalized sound level difference of small components resp. the weighted sound reduction index (in $^1/_{10}$ dB), determined on the basis of EN ISO 717-1 is:

Table 2 Results of sound insulation tests in $^1/_{10}$ dB

Tested variant	protocol No.	$D_{n,e,w}$ in dB	R_w in dB
Variant 1	A_{Wall}		51.8
Variant 2	A01D	37.4	
	A01		30.1
Variant 3	A02D	37.9	
	A02		30.6
Variant 4	A03D	42.9	
	A03		35.6

The measurement uncertainty is the average standard deviation of laboratory measurements (standard measurement uncertainty σ_R for measurement situation A: Characterisation of a building component by laboratory measurements as per EN ISO 12999-1, Table 3 $\sigma_R = 1.2$ dB).

The product declaration must use the integral value of the weighted normalized sound level difference and the spectrum adaptation terms as given in Section 3.

4.3 Test standards

Assessment as per ASTM E 413-22 was based on sound insulation testing as per EN ISO 10140-2. For some details there are deviations from test standard ASTM E 90-09.

Sound reduction index according to EN ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

Product designation Hilti Firestop Board CFS-CT HDB

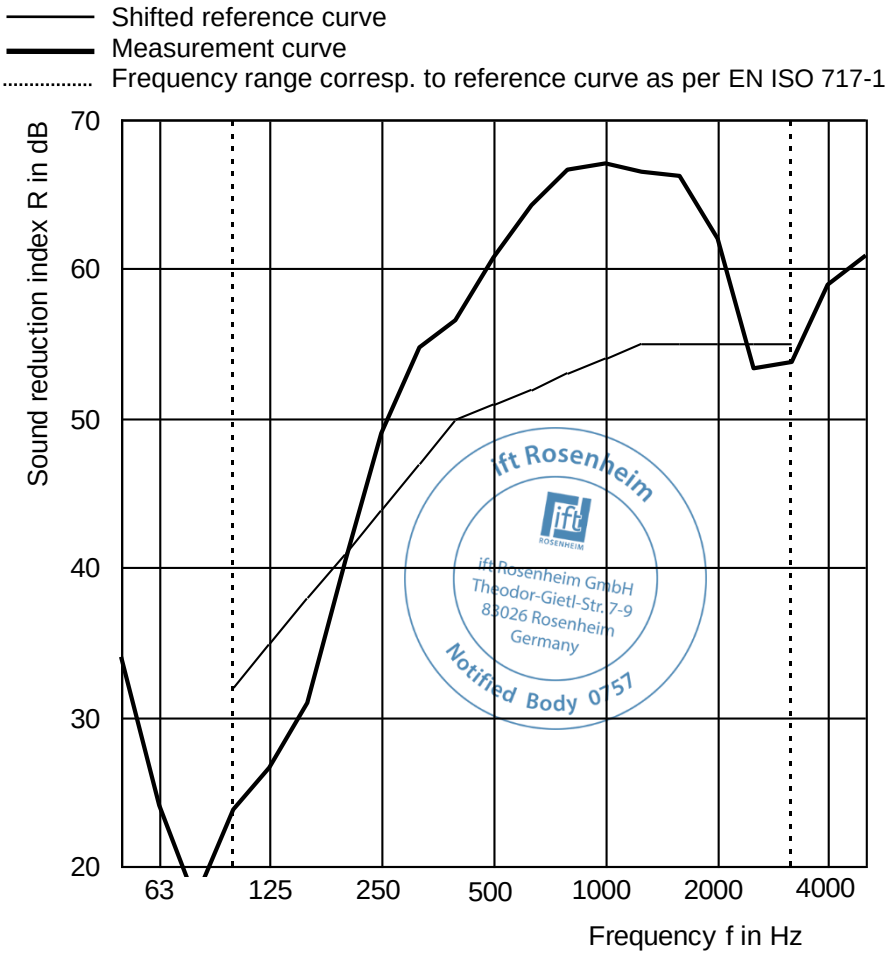
Drywall-unit

Construction
2 × 12.5 mm gypsum board
1 metal frame 50 mm
2 × 12.5 mm gypsum board
40 mm mineral fibre insulation in cavity

Variant 1
Drywall unit without wall opening and firestop board

Test date 13. July 2023
Test surface S = 1.25 m × 1.50 m = 1.88 m²
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without wall opening serves as maximum sound insulation for the units with the mounted firestop boards.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 70 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	34.0
63	24.1
80	17.7
100	23.8
125	26.6
160	30.9
200	40.5
250	49.0
315	54.7
400	56.5
500	60.8
630	64.2
800	66.6
1,000	67.1
1,250	66.5
1,600	66.2
2,000	62.0
2,500	53.4
3,150	53.8
4,000	58.9
5,000	60.9



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

R_w ($C;C_{tr}$) = 51 (-3;-10)dB $C_{50\text{-}3,150}$ = -5 dB; $C_{100\text{-}5,000}$ = -2 dB; $C_{50\text{-}5,000}$ = -4 dB
$C_{tr,50\text{-}3,150}$ = -15 dB; $C_{tr,100\text{-}5,000}$ = -10 dB; $C_{tr,100\text{-}5,000}$ = -15 dB

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Normalized sound level difference according to EN ISO 10140 - 2
Laboratory measurements of airborne sound insulation of small building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

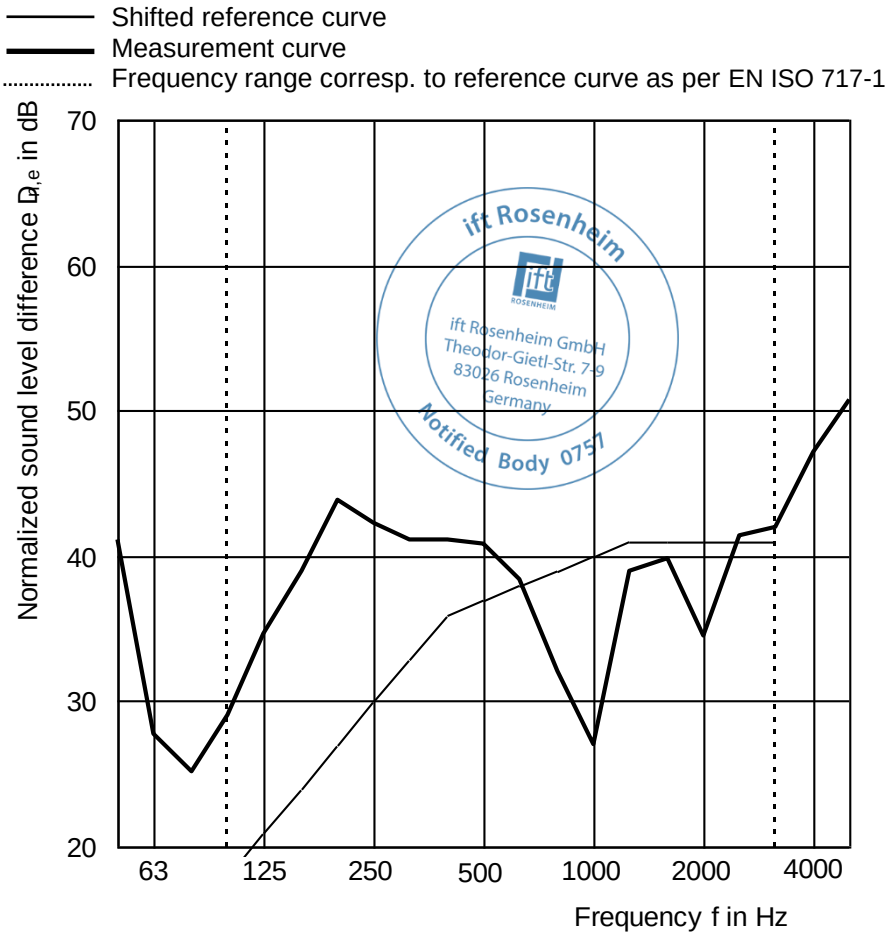
Product designation Hilti Firestop Board CFS-CT HDB

Drywall-unit

Construction	2 × 12.5 mm gypsum board
	1 metal frame 50 mm
	2 × 12.5 mm gypsum board
	40 mm mineral fibre insulation in cavity
Variant 2	Drywall unit with wall opening filled with firestop board

Test date 13. and 17. July 2023
Reference absorption surface A_0 = 10 m² (n=1)
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without wall opening serves as maximum sound insulation for the units with the mounted firestop boards.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	$D_{n,e}$ in dB
50	41.1
63	27.7
80	25.2
100	29.1
125	34.7
160	38.9
200	43.8
250	42.3
315	41.1
400	41.1
500	40.9
630	38.4
800	32.0
1,000	27.0
1,250	39.0
1,600	39.8
2,000	34.5
2,500	41,4
3,150	42.0
4,000	47.1
5,000	50.8



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

$D_{n,e,w}$ ($C;C_{tr}$) = 37 (-3;-4) dB $C_{50\text{-}3,150}$ = -3 dB; $C_{100\text{-}5,000}$ = -2 dB; $C_{50\text{-}5,000}$ = -2 dB
$C_{tr,50\text{-}3,150}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB

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Sound reduction index according to EN ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

Product designation Hilti Firestop Board CFS-CT HDB

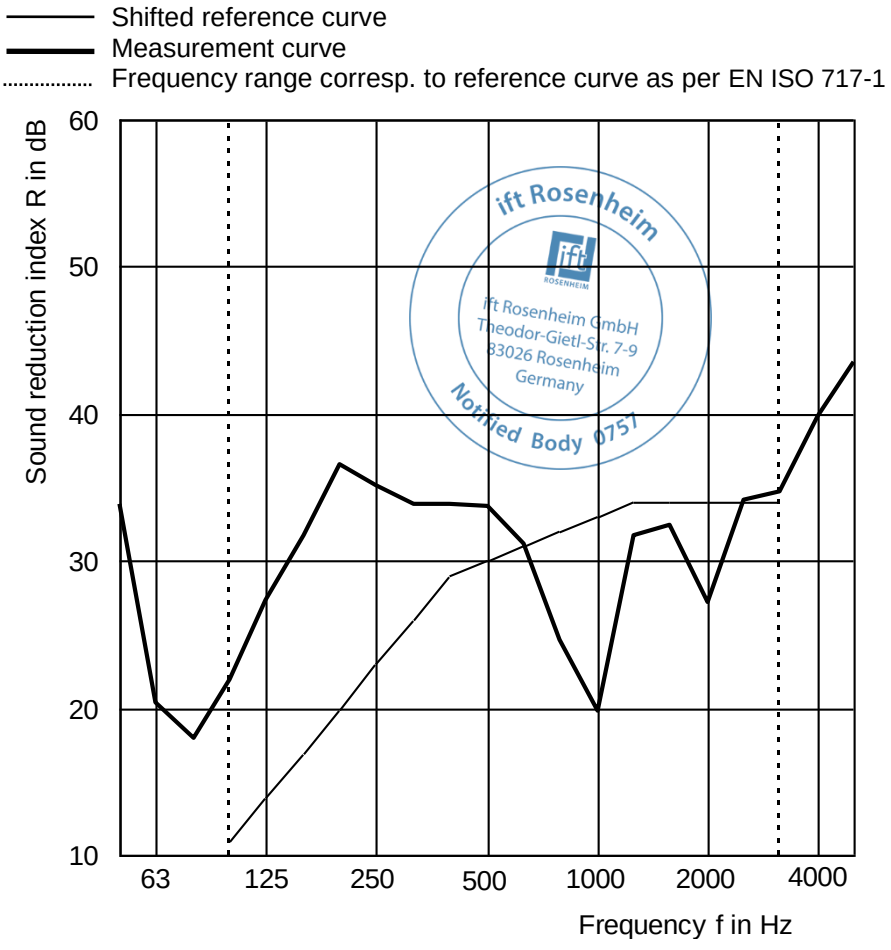
Drywall-unit

Construction
2 × 12.5 mm gypsum board
1 metal frame 50 mm
2 × 12.5 mm gypsum board
40 mm mineral fibre insulation in cavity

Variant 2
Drywall unit with wall opening filled with firestop board

Test date 13. and 17. July 2023
Test surface S = 1.25 m × 1.50 m = 1.88 m²
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	R in dB
50	33.8
63	20.4
80	17.9
100	21.9
125	27.4
160	31.7
200	36.5
250	35.1
315	33.9
400	33.8
500	33.7
630	31.1
800	24.7
1,000	19.8
1,250	31.7
1,600	32.5
2,000	27.2
2,500	34.2
3,150	34.7
4,000	39.8
5,000	43.5



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

R_w ($C;C_{tr}$) = 30 (-3; -4) dB $C_{50\text{-}3,150}$ = -3 dB; $C_{100\text{-}5,000}$ = -2 dB; $C_{50\text{-}5,000}$ = -2 dB

$C_{tr,50\text{-}3,150}$ = -5 dB; $C_{tr,100\text{-}5,000}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -5 dB

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Normalized sound level difference according to EN ISO 10140 - 2
Laboratory measurements of airborne sound insulation of small building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

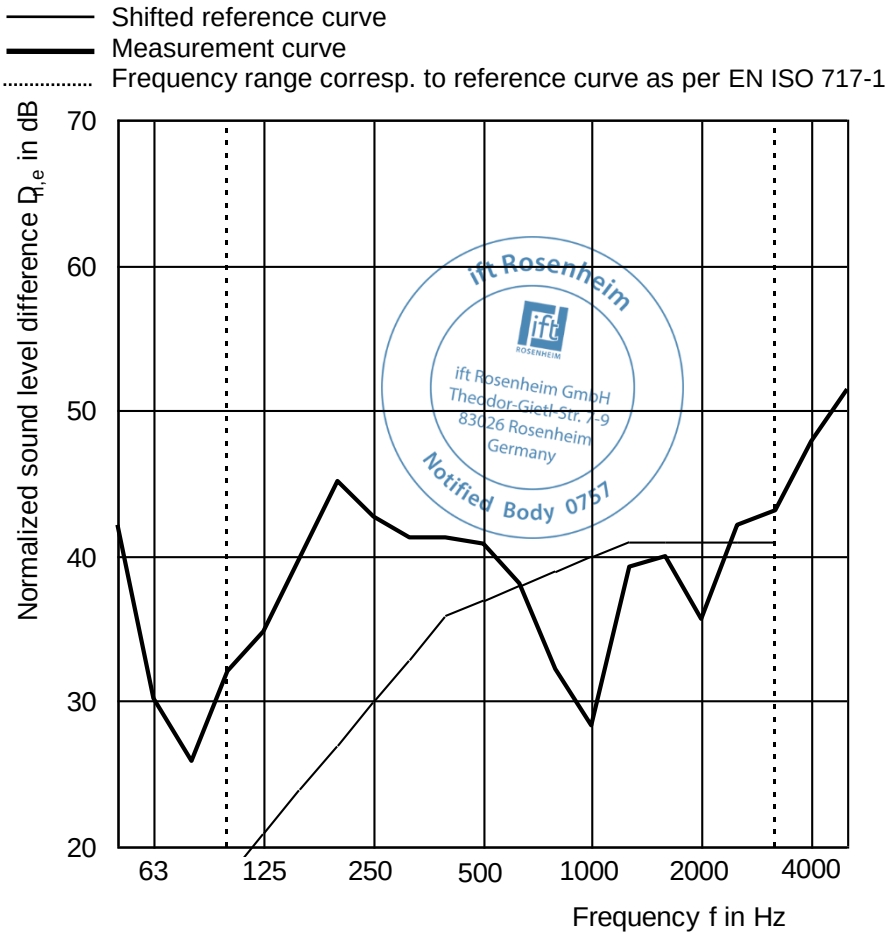
Product designation Hilti Firestop Board CFS-CT HDB

Drywall-unit

Construction	2 × 12.5 mm gypsum board
	1 metal frame 50 mm
	2 × 12.5 mm gypsum board
	40 mm mineral fibre insulation in cavity
Variant 3	Drywall unit with wall opening filled with firestop board, cut apart in the middle

Test date 13. and 17. July 2023
Reference absorption surface A_0 = 10 m² (n=1)
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without wall opening serves as maximum sound insulation for the units with the mounted firestop boards.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	$D_{n,e}$ in dB
50	42.1
63	30.2
80	25.9
100	32.0
125	34.8
160	39.8
200	45.1
250	42.7
315	41.2
400	41.2
500	40.9
630	38.1
800	32.2
1,000	28.4
1,250	39.2
1,600	40.0
2,000	35.7
2,500	42.1
3,150	43.1
4,000	47.9
5,000	51.4



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

$D_{n,e,w}$ ($C;C_{tr}$) = 37 (-2;-3) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB
$C_{tr,50\text{-}3,150}$ = -3 dB; $C_{tr,100\text{-}5,000}$ = -3 dB; $C_{tr,100\text{-}5,000}$ = -3 dB

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Sound reduction index according to EN ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

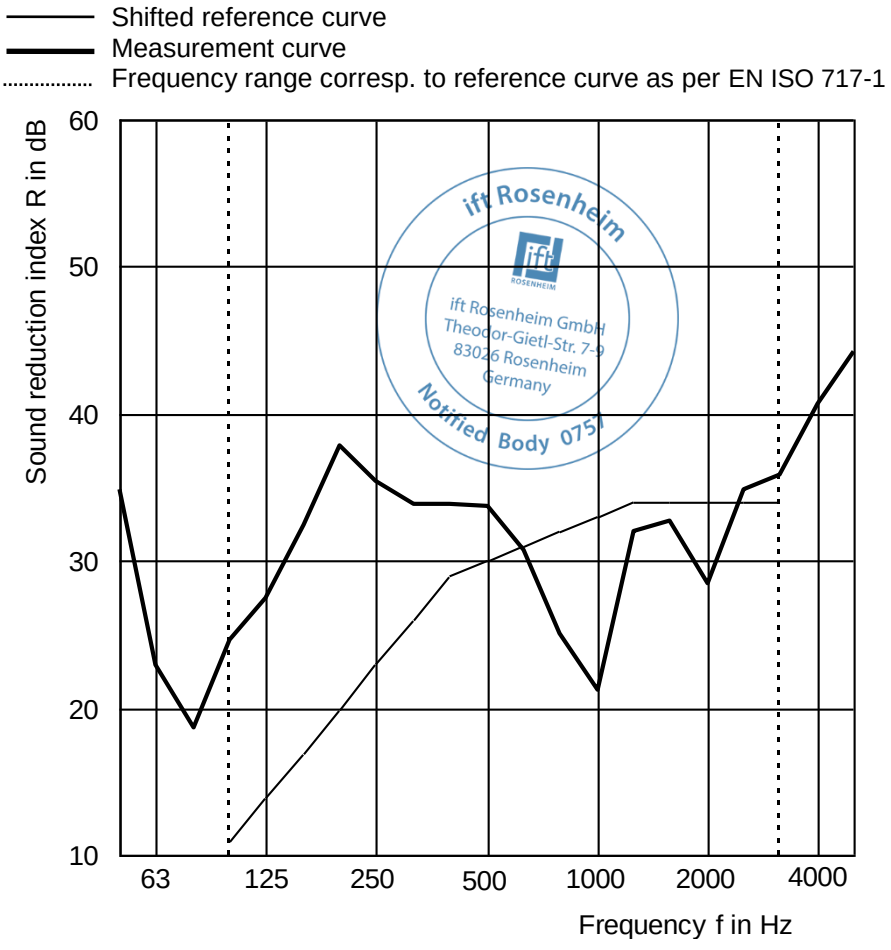
Product designation Hilti Firestop Board CFS-CT HDB

Drywall-unit

Construction	2 × 12.5 mm gypsum board
	1 metal frame 50 mm
	2 × 12.5 mm gypsum board
	40 mm mineral fibre insulation in cavity
Variant 3	Drywall unit with wall opening filled with firestop board, cut apart in the middle

Test date 13. and 17. July 2023
Test surface S = 1.25 m × 1.50 m = 1.88 m²
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	R in dB
50	34.8
63	22.9
80	18.6
100	24.7
125	27.5
160	32.5
200	37.9
250	35.4
315	33.9
400	33.9
500	33.7
630	30.8
800	25.0
1,000	21.2
1,250	32.0
1,600	32.7
2,000	28.4
2,500	34.8
3,150	35.8
4,000	40.7
5,000	44.2



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

R_w ($C;C_{tr}$) = 30 (-2;-3) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB

$C_{tr,50\text{-}3,150}$ = -3 dB; $C_{tr,100\text{-}5,000}$ = -3 dB; $C_{tr,100\text{-}5,000}$ = -3 dB

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Normalized sound level difference according to EN ISO 10140 - 2
Laboratory measurements of airborne sound insulation of small building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

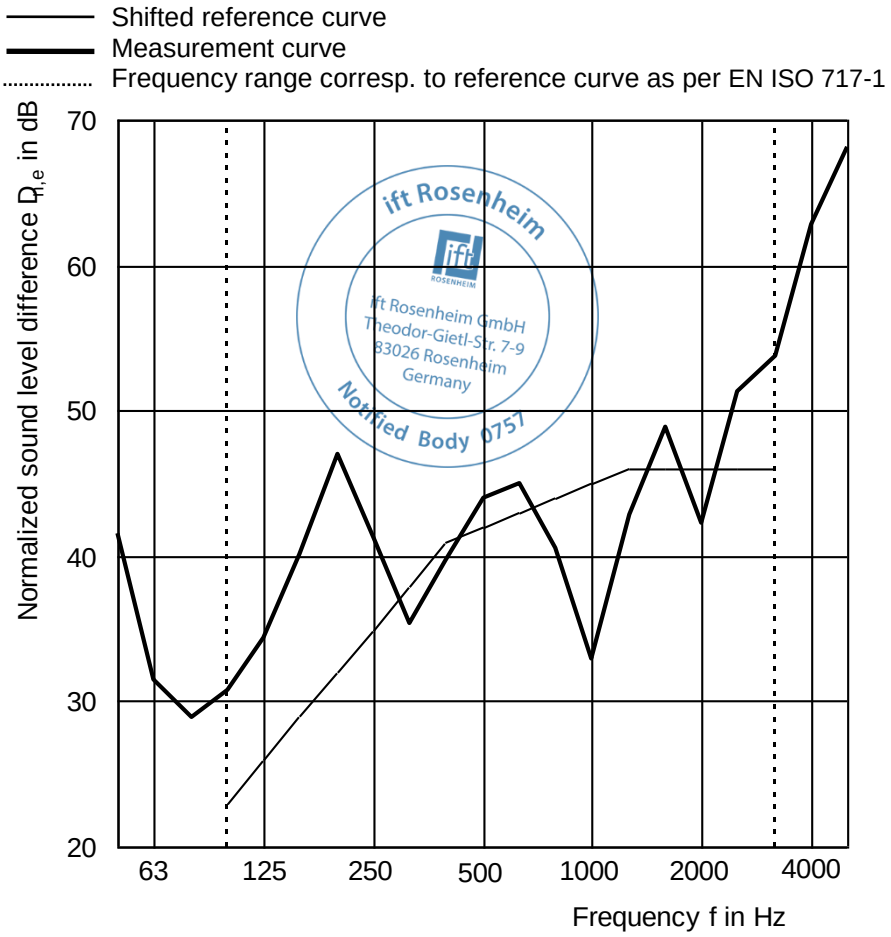
Product designation Hilti Firestop Board CFS-CT HDB

Drywall-unit

Construction	2 × 12.5 mm gypsum board
	1 metal frame 50 mm
	2 × 12.5 mm gypsum board
	40 mm mineral fibre insulation in cavity
Variant 4	Drywall unit with wall opening filled with 2 firestop boards

Test date 13. and 17. July 2023
Reference absorption surface A_0 = 10 m² (n=1)
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without wall opening serves as maximum sound insulation for the units with the mounted firestop boards.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	$D_{n,e}$ in dB
50	41.6
63	31.5
80	28.9
100	30.8
125	34.4
160	40.1
200	47.0
250	41.2
315	35.4
400	39.7
500	44.0
630	45.0
800	40.5
1,000	33.0
1,250	42.8
1,600	48.9
2,000	42.3
2,500	51.3
3,150	53.8
4,000	62.8
5,000	68.2



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

$D_{n,e,w}$ ($C;C_{tr}$) = 42 (-2;-4) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB
$C_{tr,50\text{-}3,150}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB

ift Rosenheim
Laboratory Building Acoustics

Dipl. Ing. (FH) Florian Dangl
Operating Testing Officer

Sound reduction index according to EN ISO 10140 - 2

Laboratory measurements of airborne sound insulation of building components

Client: Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, Germany

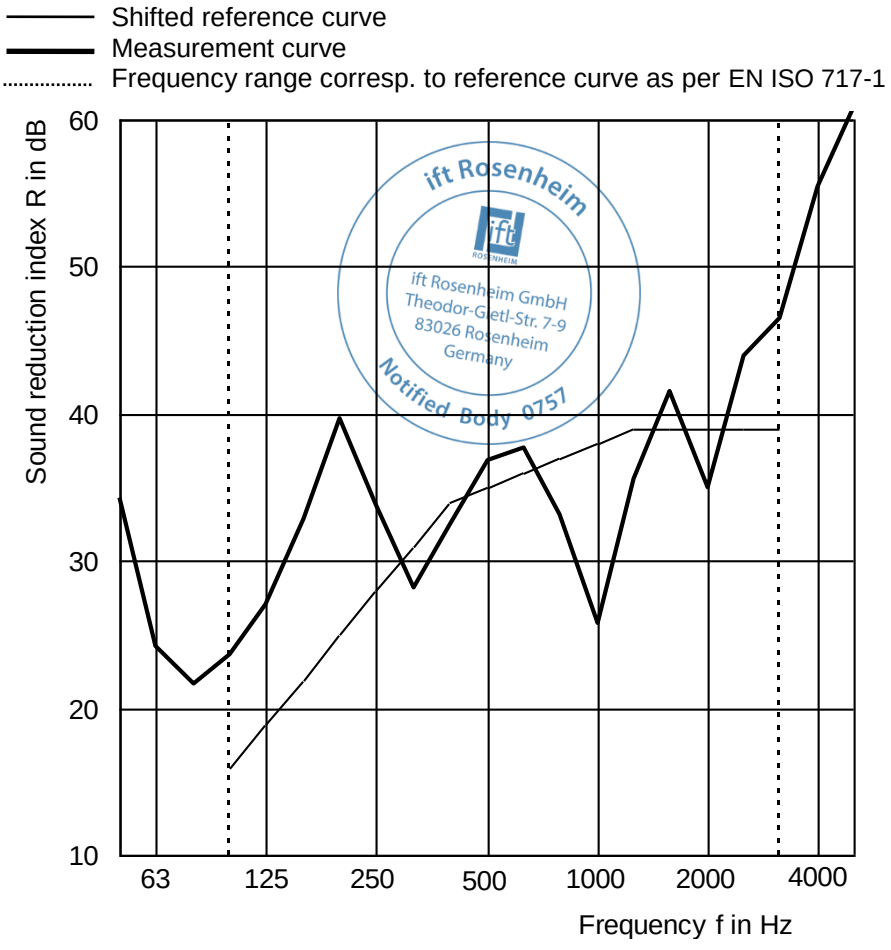
Product designation Hilti Firestop Board CFS-CT HDB

Drywall-unit

Construction	2 × 12.5 mm gypsum board
	1 metal frame 50 mm
	2 × 12.5 mm gypsum board
	40 mm mineral fibre insulation in cavity
Variant 4	Drywall unit with wall opening filled with 2 firestop boards

Test date 13. and 17. July 2023
Test surface S = 1.25 m × 1.50 m = 1.88 m²
Partition wall Double-leaf concrete wall, insert frame
Test noise Pink noise
Volumes of test rooms V_S = 130.0 m³
V_R = 107.5 m³
Maximum sound insulation
No specification.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 23°C / 76 % rH
Static air pressure 969 hPa

f in Hz	R in dB
50	34.3
63	24.2
80	21.6
100	23.6
125	27.1
160	32.9
200	39.7
250	33.9
315	28.2
400	32.4
500	36.8
630	37.7
800	33.2
1,000	25.7
1,250	35.6
1,600	41.6
2,000	35.0
2,500	44.0
3,150	46.5
4,000	55.5
5,000	60.9



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

R_w ($C;C_{tr}$) = 35 (-2;-4) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB

$C_{tr,50\text{-}3,150}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB; $C_{tr,100\text{-}5,000}$ = -4 dB

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