



To Whom it may concern,

Sound insulation performance of Hilti CFS-TTS and Hilti CP 606

Dear Madam/Sir,

The sound insulation performance of Hilti CFS-TTS and Hilti CP 606 in comparison has been tested at the Western Electro-Acoustic Laboratory (WEAL) according to ASTM E 90 and the results were interpreted according to ASTM E 413-10 as published in the test reports 20-207 until 20-222

The following wall constructions were used for these tests:

Studs used	Layers of 5/8" gypsum	Acoustic value of reference wall – STC
Single stud	1 + 1	50 dB
Single stud	2 + 2	53 dB
Double stud	1 + 1	64 dB
Double stud	1 + 2	66 dB
Double stud	2 + 2	68 dB

Size of the gap: 0,5" = 12,5 mm
Mineral wool used between the layers of gypsum

Please find the detailed setup in the test reports.

This test set-up allows to determine the influence of the sealing product alone, independent of any wall.

Calculation of STC rating for Wall with joint

If a joint is combined with a building component (e.g. wall with area S_w and sound reduction STC_w) and assuming the area of the wall is much bigger than the area of the joint S_J (joint width x joint length) the sound reduction of the wall with joint is calculated as follows:

$$STC_{\text{wall with joint}} = -10 \log \left(\frac{1}{S_{\text{res}}} (S_w 10^{-(STC_w/10)} + S_J 10^{-(STC_J/10)}) \right)$$

With
 STC_w = STC rating of the wall
 STC_J = STC rating of the joint
 S_{res} = Total Area of wall and joint
 S_w = Area of the wall
 S_J = Area of the joint



For the determination of the acoustic performance of the combination wall and joint the set-up of the wall does not make a difference. Important is the STC rating which is provided by the drywall manufacturer.

The sound performance of a drywall with Hilti CFS-TTS or Hilti CP 606 used as insulation of the head of wall joint can be assessed as follows

- a) Determine the sound performance of the wall construction provided by the drywall manufacturer (without joint).
- b) Refer to Table 1
- c) Find for the nominal acoustic performance of the wall, on **col 1**
- d) Get the expected values with an empty joint (**col 2**) or when the joint is filled with CFS-TTS (**col 3**) or when the joint is filled with Hilti CP 606 (**col 4**) from of the same line.

Table 1, calculated for a joint of up to a width of 12,5 mm

Col 1	Col 2	Col 3	Col 4
Sound insulation of wall w/o sound transmission via joints STC _{w, Wall}	Sound transmission through the wall with joint where the joint is open. STC _{wall with joint}	Sound transmission through the wall with joint filled with Hilti CFS-TTS STC _{wall with joint}	Sound transmission through the wall with joint filled with Hilti CP 606 STC _{wall with joint}
Reference: Tests 20-217, 20-218 and 20-220	Single stud, 2 + 2 boards		
42 dB	41	42	42
44 dB	43	44	44
46 dB	45	46	46
48 dB	46	48	48
50 dB	48	50	50
52 dB	49	52	52
Reference: Tests 20-213, 20-216 and 20-211	Double stud, 2 + 2 boards		
54 dB	50	54	54
56 dB	50	56	56
58 dB	51	58	58
60 dB	51	60	60
62 dB	52	62	62



Calculation of STC rating for Wall with joints bigger than 12,5 mm

The tests above were done for a joint width of 12,5 mm. In the Expert Statement 17-001738-PR03 (GAS-E03-04-02) joints with width of 25 mm were evaluated. For these calculations the following geometric data were used as input data:

Joint length $l = 4 \text{ m}$
Area $S = 10 \text{ m}^2$

When the calculations in the Expert Statement are used for values in the table above, the following results can be assumed.

Table 2, calculated for a joint of up to 25 mm

Col 1	Col 2	Col 3	Col 4
Sound insulation of wall w/o sound transmission via joints STC _{w, Wall}	Sound transmission through the wall with joint where the joint is open. STC _{wall with joint}	Sound transmission through the wall with joint filled with Hilti CFS-TTS STC _{wall with joint}	Sound transmission through the wall with joint filled with Hilti CP 606 STC _{wall with joint}
Reference: Tests 20-217, 20-218 and 20-220	Single stud, 2 + 2 boards		
42 dB	41	42	42
44 dB	43	44	44
46 dB	45	46	46
48 dB	46	48	48
50 dB	48	50	50
52 dB	49	52	52
Reference: Tests 20-213, 20-216 and 20-211	Double stud, 2 + 2 boards		
54 dB	50	54	54
56 dB	50	55	55
58 dB	51	57	57
60 dB	51	58	58
62 dB	52	60	60

With best regards

Vaden Rerikh
Product Manager – Firestop

+64 21 579 935
Vaden.Rerikh@hilti.com

Hilti (New Zealand) Limited
NZBN: 9429037347451 | NZBN: 1018686
Level 1, Building B, 600 Great South Rd, Ellerslie, 1051 |
PO Box 112-030, Penrose, 1642 | New Zealand

T 0800 444 584 | F 0800 329 445 | www.hilti.co.nz