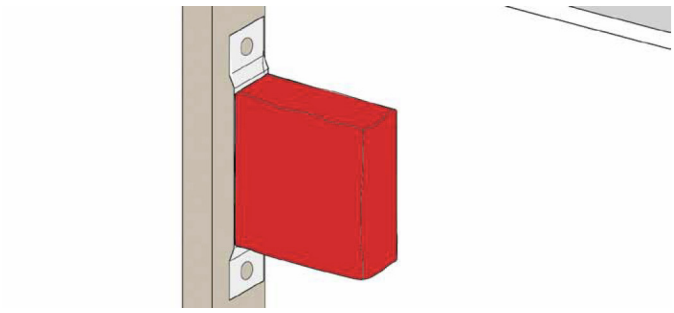
Hilti CP 617 Firestop Putty Pad

Submission Folder

Hilti (HK) | askHilti 工程師技術支援平台 ask.hilti.com.hk | 香港客戶熱線 +852 8228 8118 澳門客戶熱線(免費) 00800 8228 8118 | 香港門市：大角咀洋松街1號形品星寓地下2號舖 澳門門市：澳門布魯塞爾街70號建興龍廣場地下W座地舖 | 電郵：hksales@hilti.com 傳真：+852 2954 1751

Firestop putty pad CP 617



APPLICATIONS

- Can be used for commercial and residential applications
- Accoustically rated drywall - sound transmission classification 59 according to ASTM E90-97 (based on specific construction)
- General gypsum wall assemblies with wood or metal studs
- Socket Box, lift call button, lift indicator panel

ADVANTAGES

- Excellent adhesion to gypsum, metal and plastic
- No oil migration, putty remains flexible over time
- Pad can be moulded by hand without leaving residue on the hands
- Quick and simple to install
- Not electrically conductive

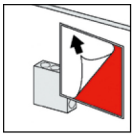
Technical data	
Colour	Red
Electrical resistance data	Non-conductive
Acoustic insulation	Yes
Intumescent	Yes
Application temperature range	0 - 40 °C
Temperature resistance range	-20 - 60 °C
Storage and transportation	-5 - 40 °C
Acoustic index (Tested to DIN EN20140)	64 dB

Acoustic

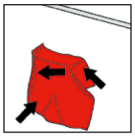
Low VOC

Mould & Mildew

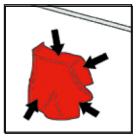
Application Procedure



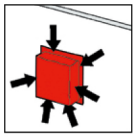
1. Remove label from one side of CP 617



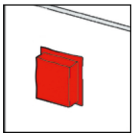
2. Adhere CP 617 to application



3. Reshape CP 617 fit around box



4. Press CP 617 to all sides of application



5. Remove other side of label

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Ordering designation	Package contents	Sales pack quantity	Item number
CP 617 6"x7"	**1x Firestop putty pad CP 617 6"x7"**	20 pc	**309760**
CP 617 L 7"x7"	**1x Firestop putty pad CP 617 L 7"x7"**	20 pc	**333583**
CP 617 XL 9"x9"	**1x Firestop putty pad CP XL 617 9"x9"**	20 pc	**373387**
CP 617 170x230mm	**1x Firestop putty pad CP 617 170x230mm**	20 pc	**39215**

Please visit Hilti website for the latest item numbers and related products

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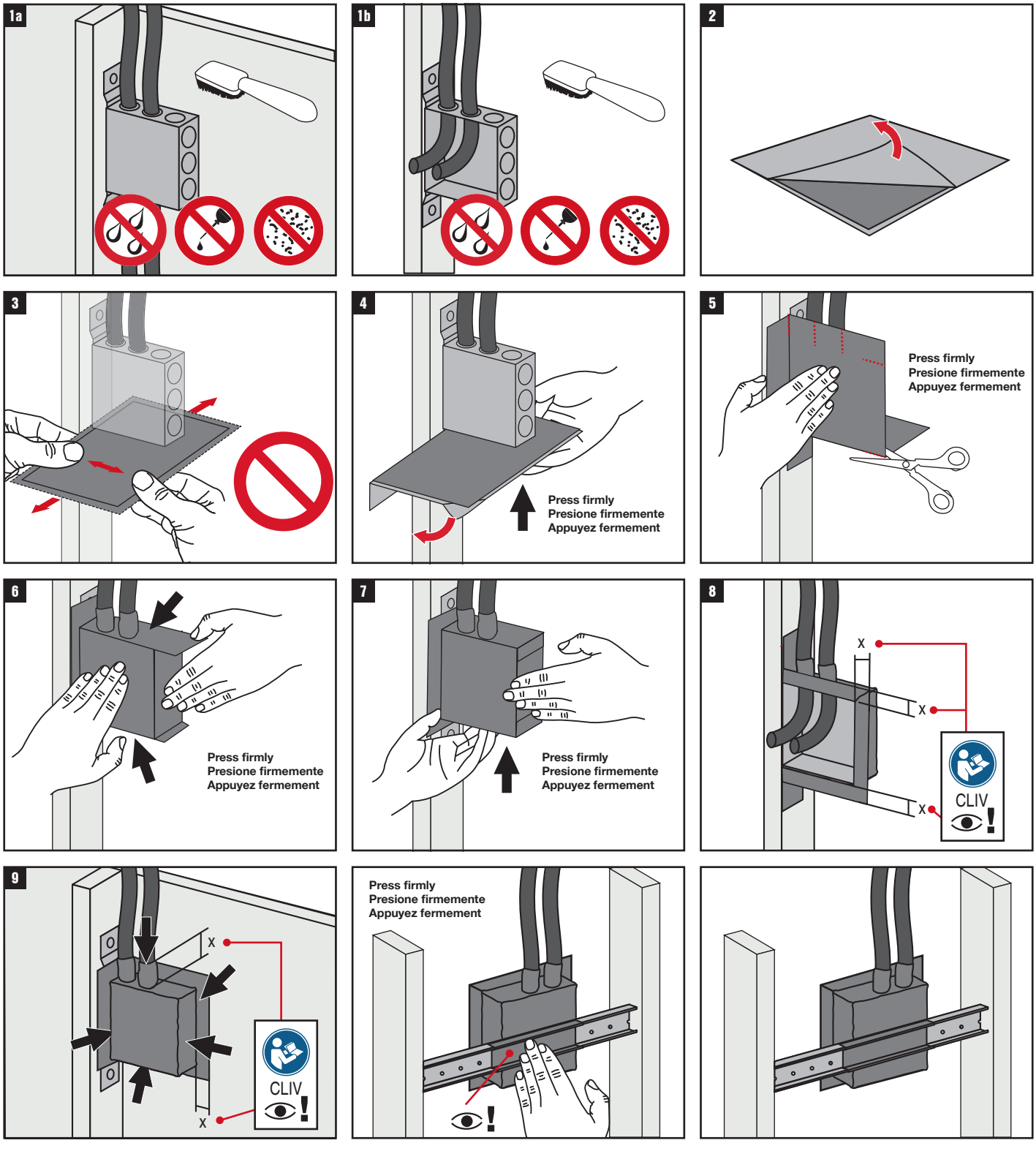


Research Engineering Development Façade Consultants Limited
雄略幕牆顧問有限公司
Tel: (852) 2807-0930 Fax: (852) 2662-6105

TEST REPORT

TEST REPORT NO.: R13H36
DATE OF ISSUE: 7 October 2013

Test Sponsors:	**Hilti (Hong Kong) Limited**
Address of Test Sponsors:	701-704, 7/F, Tower A, Manulife Financial Centre, 223 Wai Yip Street, Kwun Tong, Kowloon
Identification of Test Item:	***Q13H02 – 2 nos. of Concrete Walls with Cast-in Socket Boxes Incorporated with 'Hilti CP617' Intumescent Acoustic Putty Pads***
Test Method:	Fire resistance test conducted in accordance with BS EN 1364-1: 1999
Date of Test:	29 August 2013
Ambient temperature at the time of testing:	32 °C* (See note on page 7)
Location of Testing Laboratory:	Tuen Mun laboratory at DD134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong

APPROVED SIGNATORY: _____ DATE: 07 OCT 2013
Ir Dr. YUEN Sai-wing, MHKIE (FIRE)

The test results are valid only for the conditions under which the test was conducted.
Hong Kong Accreditation Service (HKAS) has accredited this laboratory under Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accreditation laboratories. The results shown in this test report were determined by this laboratory in accordance with its terms of accreditation. This report may not be reproduced except in full.

Contents

Fire resistance test conducted in accordance with BS EN 1364-1: 1999 on 2 nos. of Concrete Walls with Cast-in Socket Boxes Incorporated with 'Hilti CP617' Intumescent Acoustic Putty Pads

1. Summary

Two (2) numbers of specimens of concrete walls with cast-in socket boxes incorporated with 'Hilti CP617' intumescent acoustic putty pads, namely specimens 'A' and 'B' (refer to photo 5), had been subjected to a test in accordance with BS EN 1364-1: 1999 in order to determine their fire resistance performance. As requested by the test sponsor, the specimens were mounted within concrete lined specimen holder by the test sponsor as shown in the test sponsor's drawing (see the appendix). Specimens 'A' and 'B' were asymmetrical and the fire side of specimens were determined by the test sponsor.

Specimen 'A' had overall dimensions of 1,450 mm wide by 750 mm high by 100 mm thick. It was comprised of a concrete wall with 8 nos. of cast-in socket boxes, namely specimens 'A1' to 'A7' (refer to photos 1 and 2), facing towards the exposed side. Specimen 'A1' was comprised of 2 nos. of cast-in socket boxes, each with overall sizes of 235 mm wide by 155 mm high by 50 mm deep facing back-to-back with each other (refer to test sponsor's drawings). Two layers of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pads were attached to the back of the cast-in socket boxes by its self-adhesive ability. Specimens 'A2', 'A3' and 'A5' were comprised of cast-in socket boxes, with overall sizes of 135 mm wide by 75 mm high by 50 mm deep, 235 mm wide by 155 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'A4', 'A6' and 'A7' were comprised of cast-in socket boxes, with overall sizes of 75 mm wide by 75 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 235 mm wide by 155 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached inside each cast-in socket box by its self-adhesive ability.

Specimen 'B' had overall dimensions of 1,450 mm wide by 750 mm high by 100 mm thick. It was comprised of a concrete wall with 6 nos. of cast-in socket boxes, namely specimens 'B1' to 'B6' (refer to photos 3 and 4), facing towards the unexposed side. Specimens 'B1', 'B2' and 'B3' were comprised of cast-in socket boxes, with overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'B4', 'B5' and 'B6' were comprised of cast-in socket boxes, with

overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached inside each cast-in socket box by its self-adhesive ability.

The specimens satisfied the performance requirements specified in BS EN 1364-1: 1999, for the following periods:

Specimen 'A'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'A1'):		**66** Minutes
Insulation (Specimens 'A2'):		**66** Minutes
Insulation (Specimens 'A3'):		**66** Minutes
Insulation (Specimens 'A4'):		**66** Minutes
Insulation (Specimens 'A5'):		**66** Minutes
Insulation (Specimens 'A6'):		**66** Minutes
Insulation (Specimens 'A7'):		**66** Minutes

Specimen 'B'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'B1'):		**66** Minutes
Insulation (Specimens 'B2'):		**66** Minutes
Insulation (Specimens 'B3'):		**66** Minutes
Insulation (Specimens 'B4'):		**66** Minutes
Insulation (Specimens 'B5'):		**66** Minutes
Insulation (Specimens 'B6'):		**66** Minutes

The test was discontinued after a period of 66 minutes.

2. Introduction

The specimen was tested in accordance with BS EN 1364-1: 1999, 'Fire resistance tests for non-loadbearing elements – Part 1 Walls'.

This test report should be read in conjunction with BS EN 1363-1: 1999, 'Fire resistance tests – Part 1: General requirements'.

The specimens were mounted and constructed by Research Engineering Development Façade Consultants Limited (RED). The test was led by Miss Kerry Hung of RED and was witnessed by Mr. W.H. Pang, Mr. Y.C. Ho, Mr. Alan Wong and Mr. Joe Tam, the representatives of the test sponsor.

3. Test Specimen Construction

The specimens were installed into a concrete specimen holder to form the test construction. A comprehensive description of the test construction is presented in the appendix, which is based on a survey of the specimens and information supplied by the test sponsor.

4. Location of Testing Laboratory

Tuen Mun laboratory at DD134, Lung Kwu Tan, Tuen Mun, New Territories, Hong Kong.

5. Equipment

Equipment includes:

Six (6) 'type K' thermocouples to monitor the temperature of the furnace, which were kept at 100 mm from the exposed face of the specimens (see Figure 1).

Twenty-eight (28) 'type K' thermocouples to monitor the temperature of the specimens (see Figures 2 and 3).

A 'type K' roving thermocouple to measure temperature on hot spots of unexposed surface of the specimens.

A micro-manometer provided to monitor the furnace pressure.

Cotton pads, 6 mm and 25 mm gap gauges.

A radiometer placed at 1,000 mm away from the unexposed surface to measure the radiation of unexposed surface of the specimen.

6. Conditioning

The specimen's storage, construction, and test preparation took place in the testing laboratory over a total, combined time of 10 days. Throughout this period of time, both of the temperature and humidity of the laboratory were measured and recorded as being within a range of 29 °C to 32 °C and 72 % to 86 % respectively.

7. Verification of Test Specimen

In order to ensure the description of the test specimen, and in particular its construction, is on conformity with the test specimen, the laboratory shall either oversee the fabrication of the test specimens or request an additional test specimen.

In this case, the construction details of specimen are verified on site by RED, which is shown in 'Appendix D – Information from Test Sponsor'.

8. Test Procedures

The test was conducted in accordance with the procedures specified in BS EN 1364-1: 1999. The ambient temperature of the test area during the test was measured. After the first 5 minutes of the test, the furnace pressure was maintained at 17 ± 3 Pa relative to atmosphere, at the top of specimens 'A' and 'B'. The furnace was monitored by six (6) thermocouples so that the mean furnace temperature complied with the requirements of Clause 4.5.1.1 of BS EN 1363-1:1999.

The temperature of the specimens was monitored by means of twenty-eight (28) thermocouples (S1 – S28) fixed to the specimens (see Figures 2 - 3 for the locations and reference numbers of the thermocouples).

Thermocouples S1 – S5 were the key thermocouples for monitoring both of the mean and maximum surface temperatures of unexposed surface of concrete wall for specimen 'A'. Thermocouples S11 – S12 were fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A1'. Thermocouple S13 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A2'. Thermocouples S14 – S15 were fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A3'. Thermocouple S6 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A4'. Thermocouple S7 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A5'. Thermocouple S8 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A6'. Thermocouples S9 – S10 were fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'A7'.

Thermocouples S16 – S20 were the key thermocouples for monitoring both of the mean and maximum surface temperatures of unexposed surface of concrete wall for specimen 'B'. Thermocouples S25 – S26 were fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'B1'. Thermocouple S27 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'B2'. Thermocouple S28 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'B3'. Thermocouples S21 – S22 were fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'B4'. Thermocouple S23 was fixed for monitoring the maximum surface temperature of unexposed surface

of specimen 'B5'. Thermocouple S24 was fixed for monitoring the maximum surface temperature of unexposed surface of specimen 'B6'.

The mean and maximum temperatures were recorded. The cotton pads and gap gauges were used, if considered appropriate, to determine compliance with the integrity criterion of the standard. The occurrence of sustained flaming on the unexposed surface was monitored to determine compliance with this criterion. The radiation of the specimen, as viewed from the unexposed surface 1,000 mm away from the specimen, was recorded.

9. Test Data and Information

The ambient temperature of the test area during the test was 32 °C.

The furnace was controlled so that the mean furnace temperature complied with the requirements of Clause 4.5.1.1 of BS EN 1363-1:1999. The temperature recorded is shown graphically in Figure 5.

The mean and maximum temperatures of the unexposed surface of concrete wall of specimen 'A' are shown graphically in Figure 6.

The maximum temperatures of the unexposed surface of specimens 'A1' to 'A7' are shown graphically in Figure 7.

The mean and maximum temperatures of the unexposed surface of concrete wall of specimen 'B' are shown graphically in Figure 8.

The maximum temperatures of the unexposed surface of specimens 'B1' to 'B6' are shown graphically in Figure 9.

The furnace pressure is shown graphically in Figure 10.

The radiation obtained is shown graphically in Figure 11.

A summary of the observations made on the general behaviour of the specimens is given in the appendix.

The deflection obtained is summarized in Table 1.

The mean furnace temperature obtained is summarized in Table 2.

The temperature rise of specimens obtained is summarized in Tables 3 - 4.

The test was discontinued after a period of 66 minutes.

**Note: The ambient temperature was outside the range of 10 – 30 °C during the test as specified in the test standard.*

10. Results

When tested in accordance with BS EN 1364-1: 1999, the requirements of the standard were satisfied for the following periods:

Specimen 'A'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'A1'):		**66** Minutes
Insulation (Specimens 'A2'):		**66** Minutes
Insulation (Specimens 'A3'):		**66** Minutes
Insulation (Specimens 'A4'):		**66** Minutes
Insulation (Specimens 'A5'):		**66** Minutes
Insulation (Specimens 'A6'):		**66** Minutes
Insulation (Specimens 'A7'):		**66** Minutes

Specimen 'B'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'B1'):		**66** Minutes
Insulation (Specimens 'B2'):		**66** Minutes
Insulation (Specimens 'B3'):		**66** Minutes
Insulation (Specimens 'B4'):		**66** Minutes
Insulation (Specimens 'B5'):		**66** Minutes
Insulation (Specimens 'B6'):		**66** Minutes

Insulation - It is required that the mean temperature rise of the unexposed surface shall not be greater than 140 °C and that maximum temperature rise shall not be greater than 180 °C. Insulation failure also occurs simultaneously with integrity failure.

Specimen 'A' (Concrete wall only)

The 140 °C rise of the mean temperature of the unexposed surface of specimen did not reach during the test. The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 107 °C measured by thermocouple S5 after a heating period of 66 minutes.

Specimen 'A1'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 153 °C measured by thermocouple S11 after a heating period of 66 minutes.

Specimen 'A2'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 69 °C measured by thermocouple S13 after a heating period of 66 minutes.

Specimen 'A3'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 109 °C measured by thermocouple S15 after a heating period of 66 minutes.

Specimen 'A4'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 77 °C measured by thermocouple S6 after a heating period of 66 minutes.

Specimen 'A5'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 68 °C measured by thermocouple S7 after a heating period of 66 minutes.

Specimen 'A6'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 71 °C measured by thermocouple S8 after a heating period of 66 minutes.

Specimen 'A7'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 169 °C measured by thermocouple S10 after a heating period of 66 minutes.

Specimen 'B' (Concrete wall only)

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 89 °C measured by thermocouple S20 after a heating period of 66 minutes.

Specimen 'B1'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 151 °C measured by thermocouple S25 after a heating period of 61 minutes.

Specimen 'B2'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 156 °C measured by thermocouple S27 after a heating period of 57 minutes.

Specimen 'B3'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 73 °C measured by thermocouple S28 after a heating period of 66 minutes.

Specimen 'B4'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 120 °C measured by thermocouple S21 after a heating period of 49 minutes.

Specimen 'B5'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 166 °C measured by thermocouple S23 after a heating period of 66 minutes.

Specimen 'B6'

The 180 °C rise of the maximum temperature of the unexposed surface of specimen did not reach during the test. The maximum temperature rise of the specimen was 154 °C measured by thermocouple S24 after a heating period of 66 minutes.

Integrity - It is required that there is no collapse for the specimen, no sustained flaming on the unexposed surface and no loss of impermeability.

Specimen 'A'

The specimen met the integrity requirements after a heating period of 66 minutes.

Specimen 'B'

The specimen met the integrity requirements after a heating period of 66 minutes.

11. Limitations

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in BS EN 1363–1, and where appropriate BS EN 1363–2. Any significant deviation with respect to sizes, construction details, loads, stresses, edge or end conditions other than those allowed under the field of application in the relevant test method is not covered by this report.

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result. Therefore, the results are not intended to be the sole criteria for assessing the potential fire performance of the element in use nor do they reflect the actual behaviour in fires.

Appendix A - Photos and Test Records

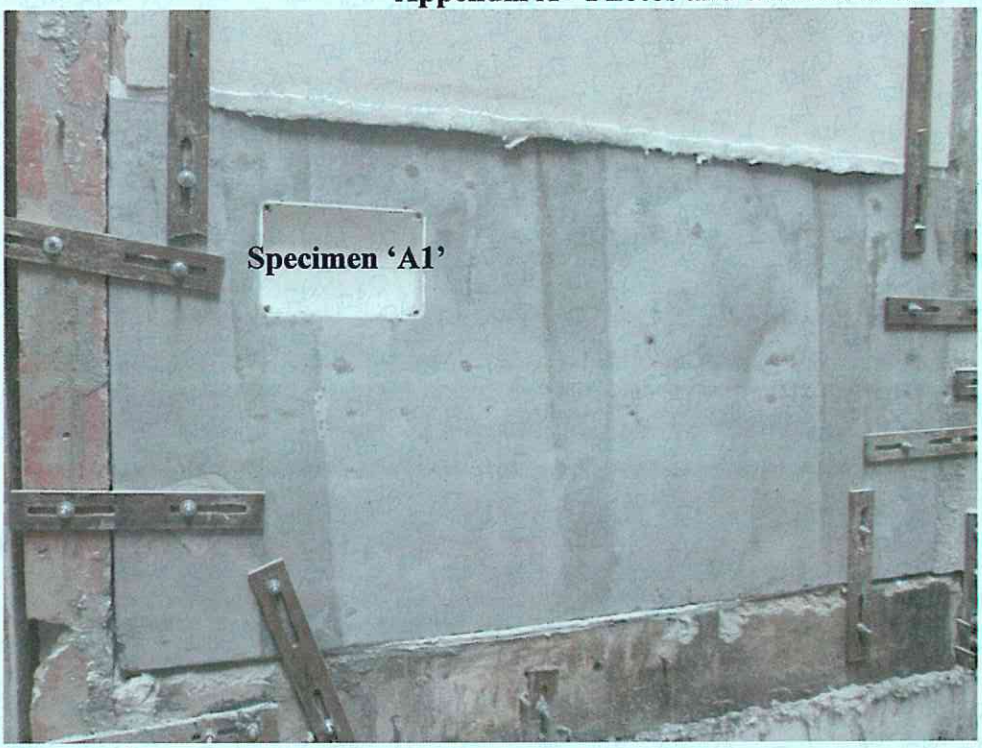


Photo 1 - The unexposed surface of the specimen 'A' before the test.

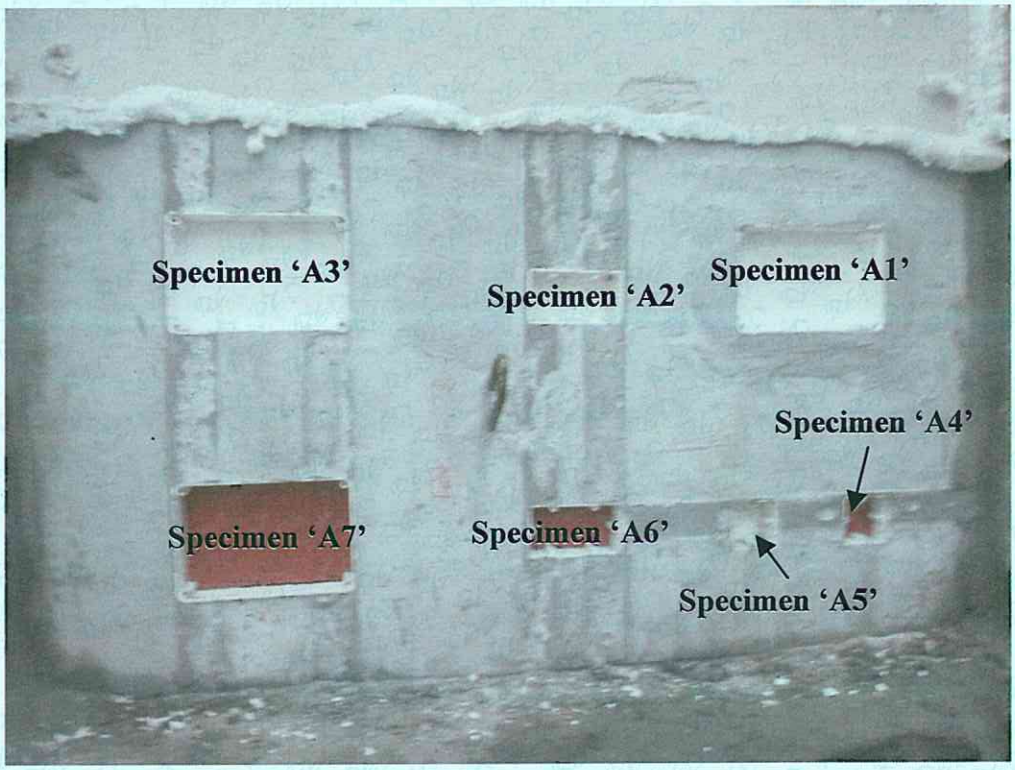


Photo 2 - The exposed surface of the specimen 'A' before the test.

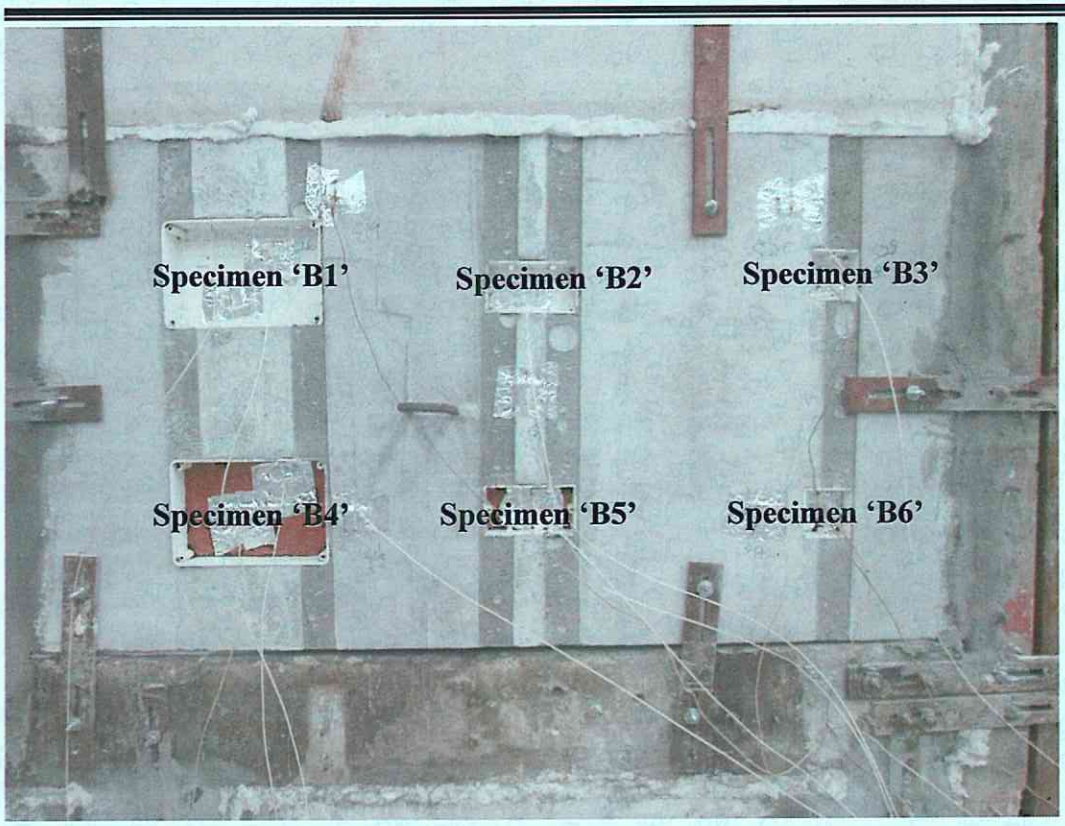


Photo 3 - The unexposed surface of the specimen 'B' before the test.

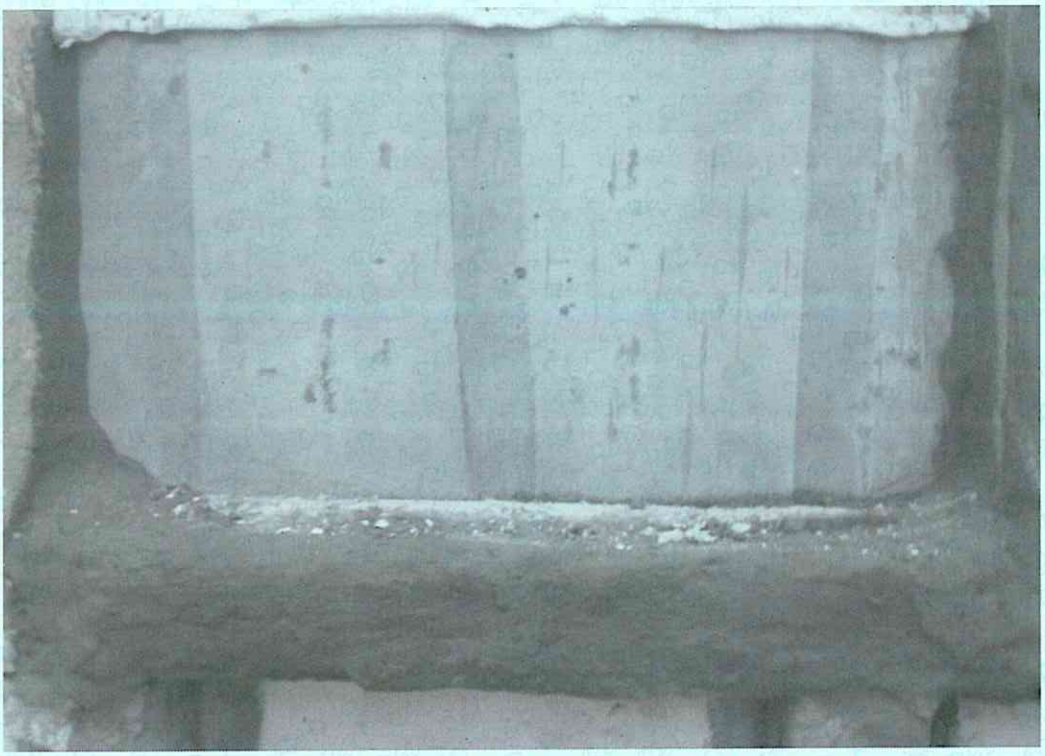


Photo 4 - The exposed surface of the specimen 'B' before the test.

Photo 5 - The unexposed surfaces of the specimens before the test.

Photo 6 - The unexposed surfaces of the specimens after a heating period of 30 minutes.

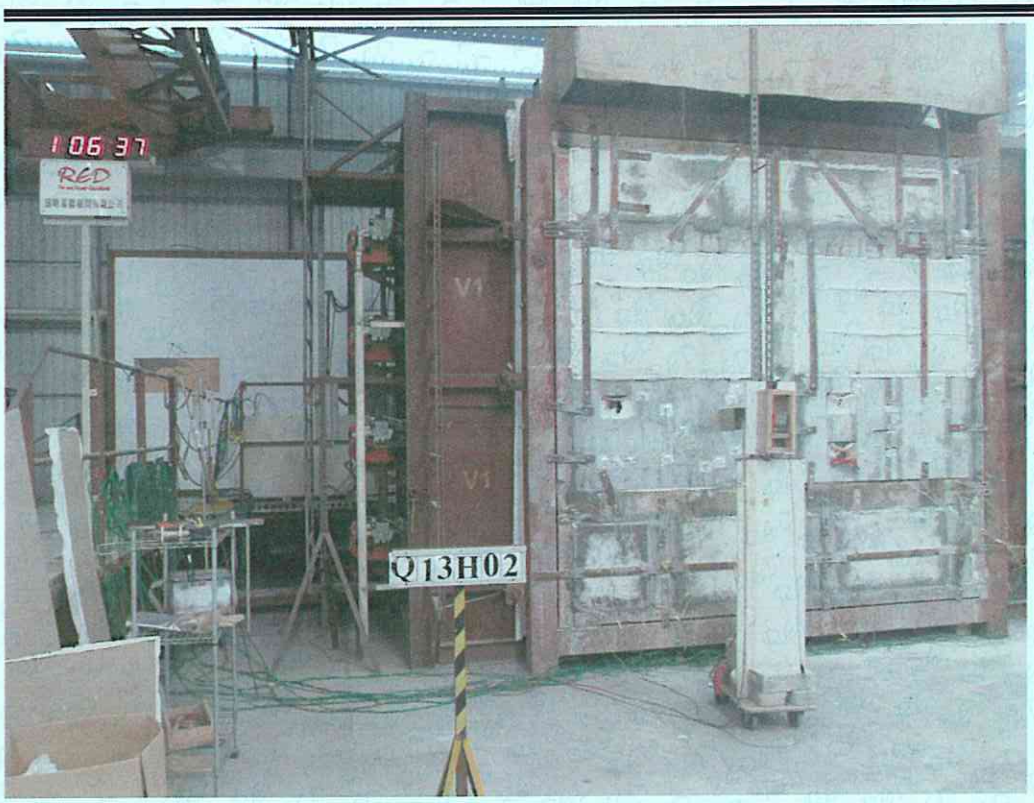


Photo 7 - The unexposed surfaces of the specimens after the test.

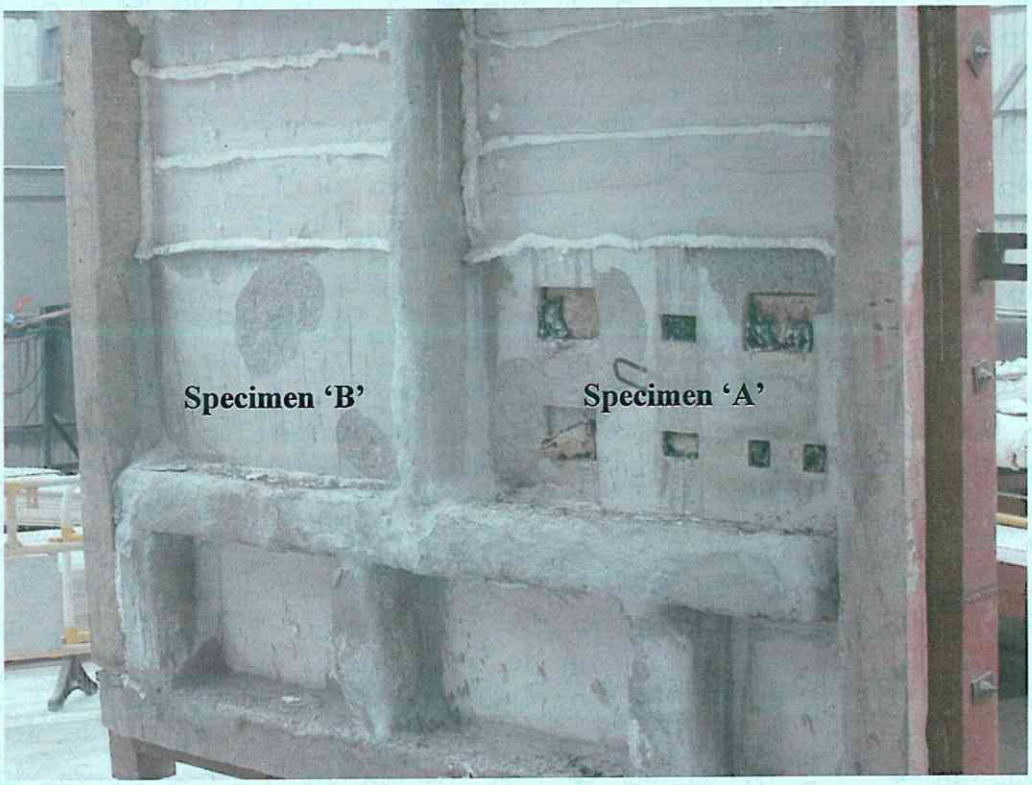


Photo 8 - The exposed surfaces of the specimens after the test.

Photo 9 - The unexposed surface of the specimen 'A' after the test.

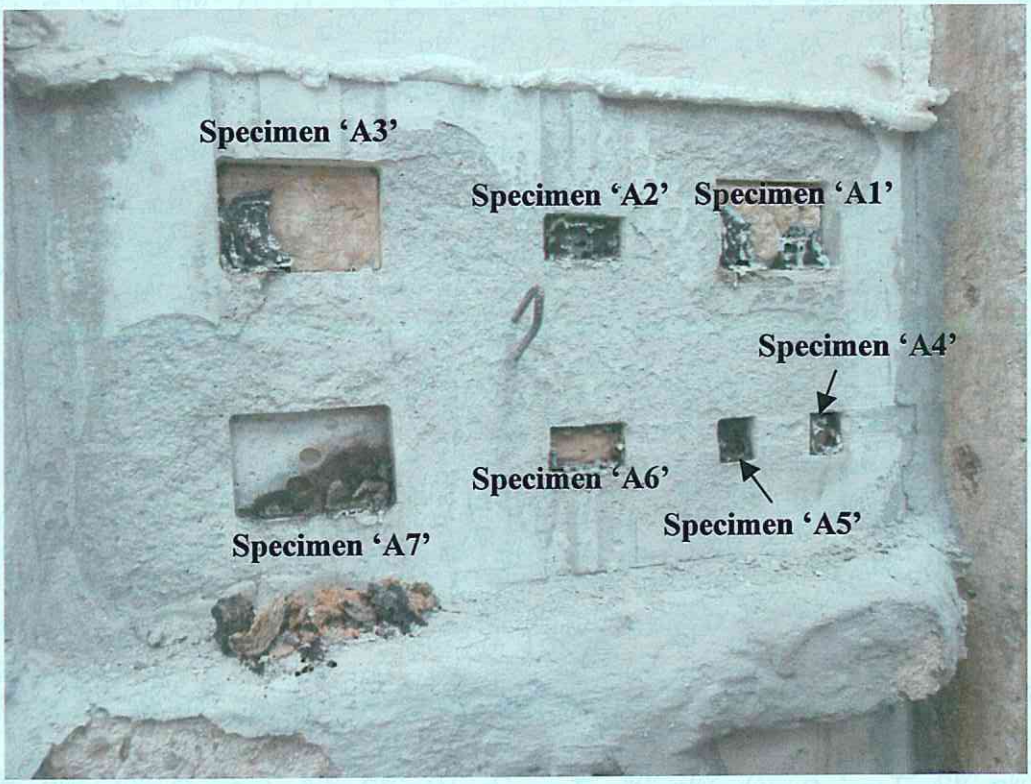


Photo 10 - The exposed surface of the specimen 'A' after the test.

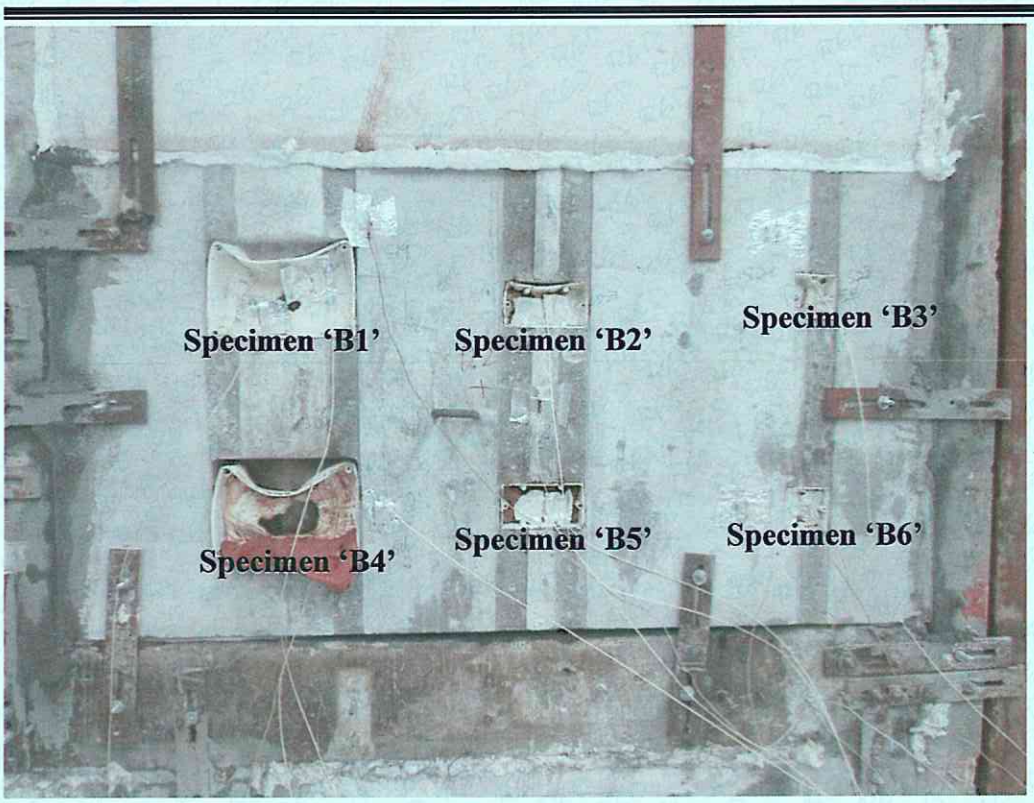


Photo 11 - The unexposed surface of the specimen 'B' after the test.

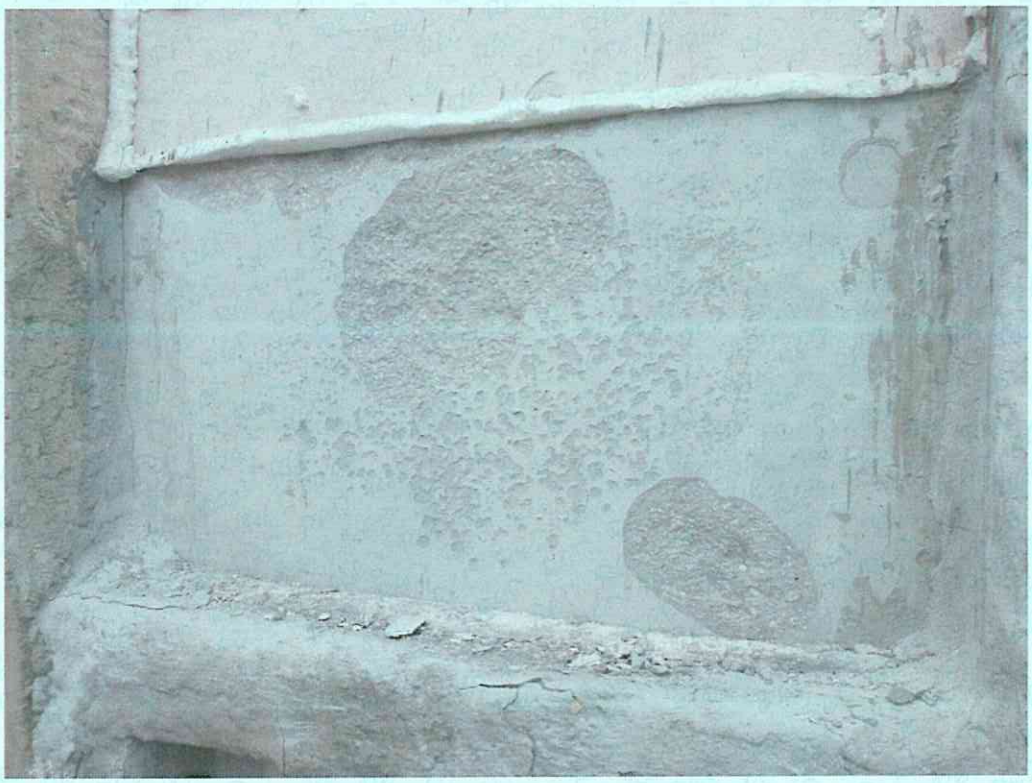


Photo 12 - The exposed surface of the specimen 'B' after the test.

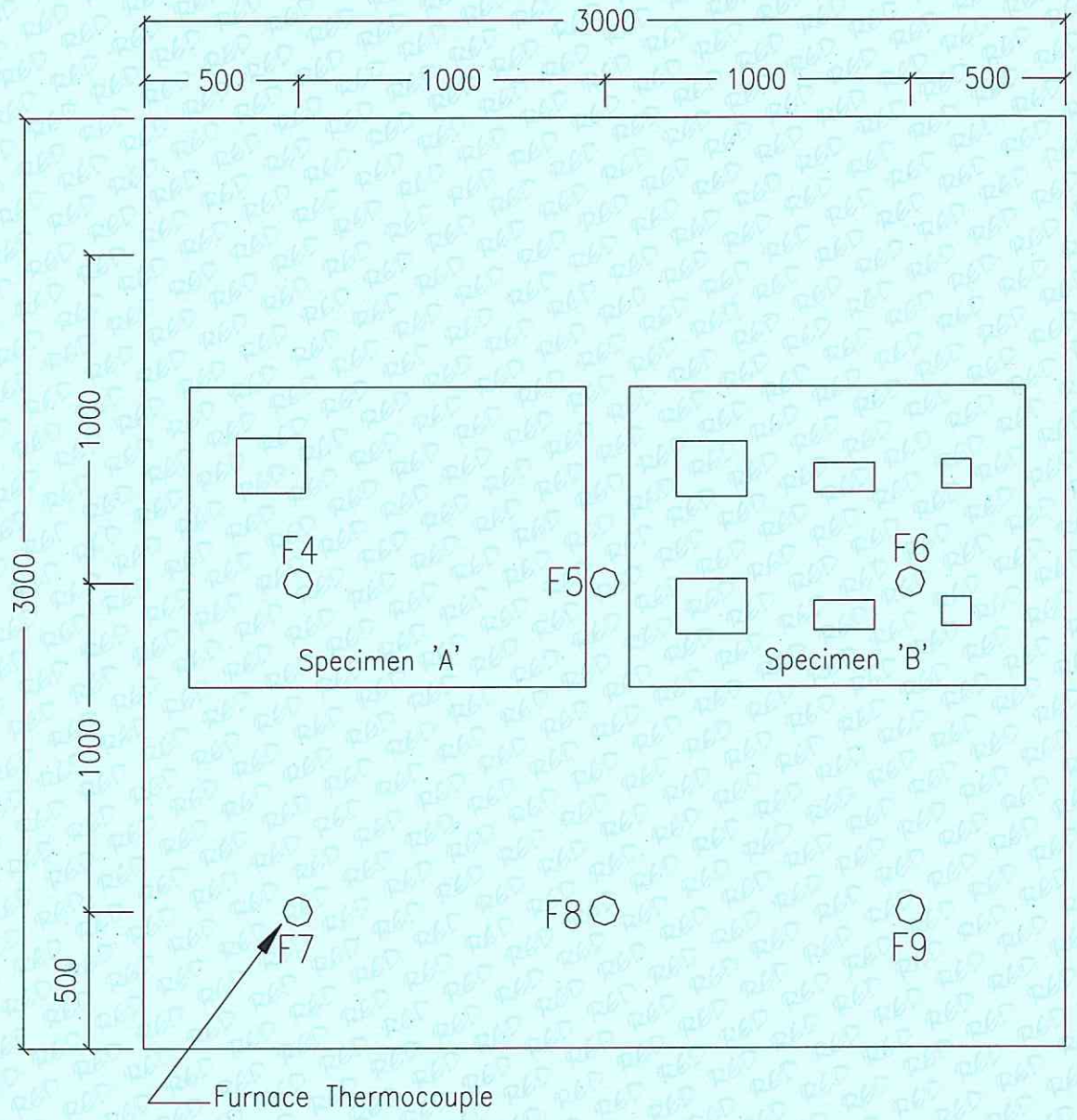


Figure 1 - Locations and reference numbers of furnace thermocouples.
(This figure is not to scale and all dimensions are measured in millimetres)

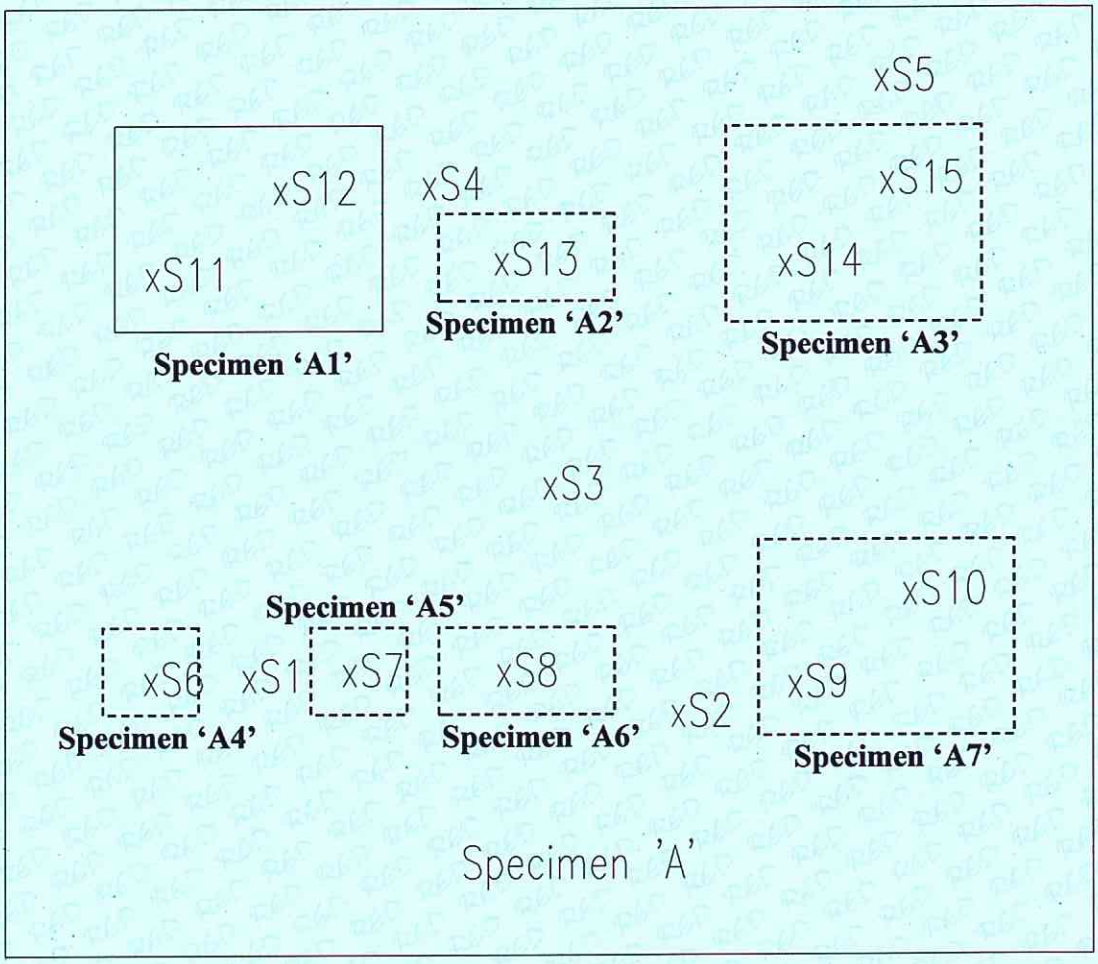


Figure 2 - Locations and reference numbers of thermocouples to monitor the temperature of unexposed surface of specimen 'A'. (This figure is not to scale)

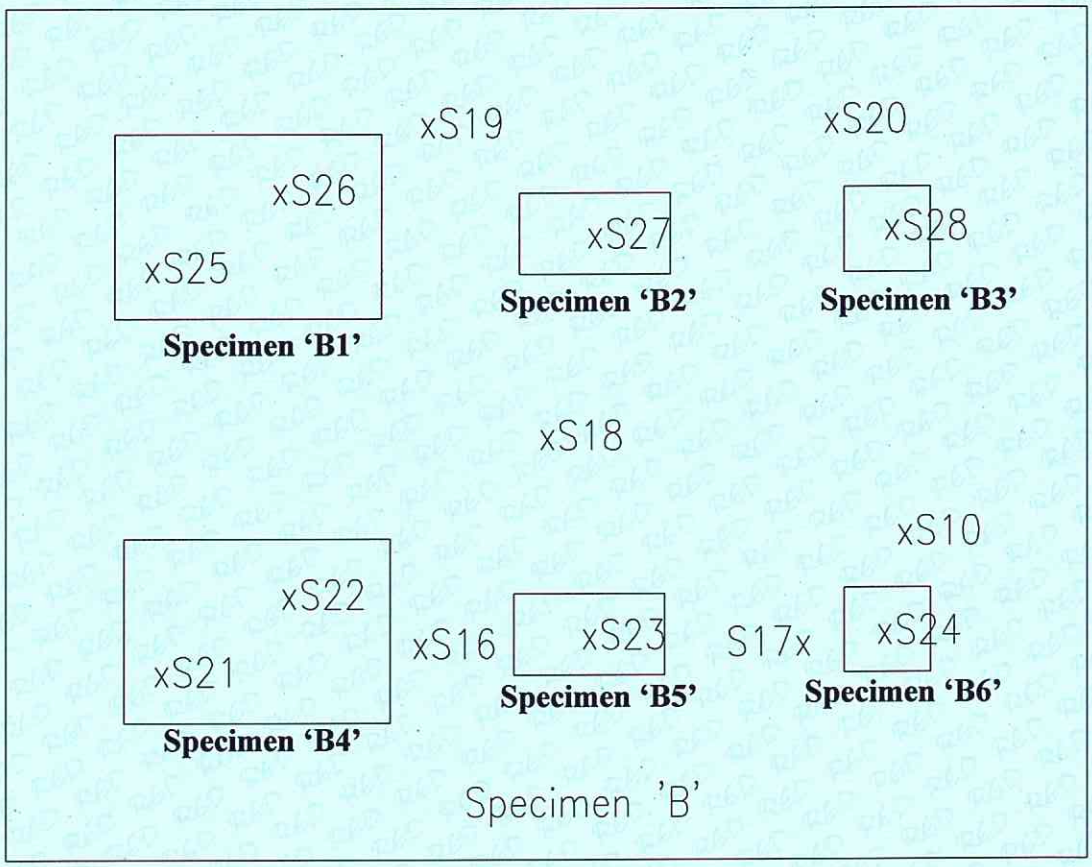


Figure 3 - Locations and reference numbers of thermocouples to monitor the temperature of unexposed surface of specimen 'B'. (This figure is not to scale)

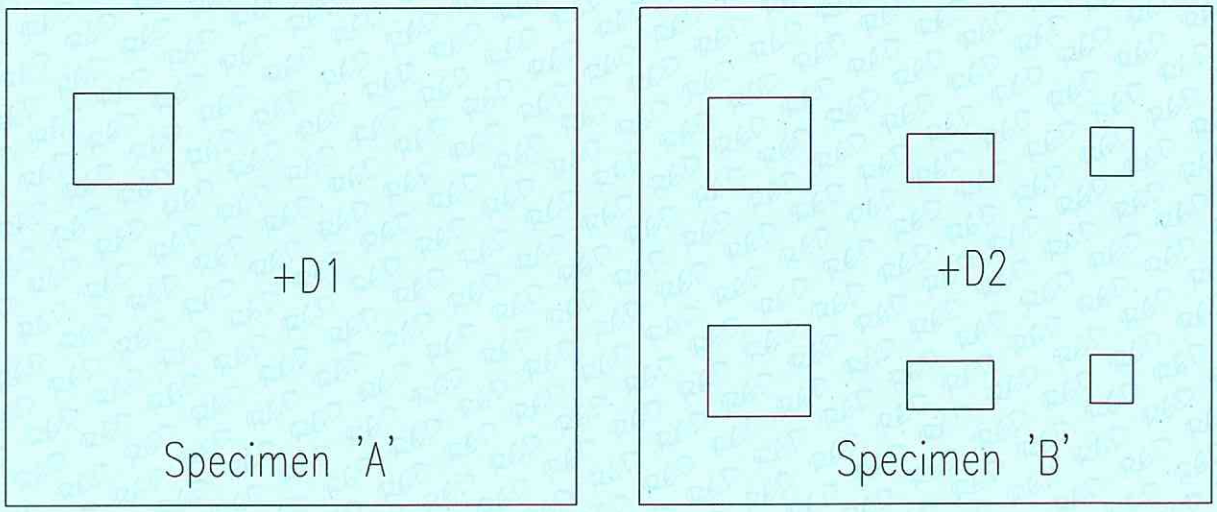


Figure 4 – Locations and reference numbers of displacement measurement.
(This figure is not to scale and all dimensions are in millimetres)

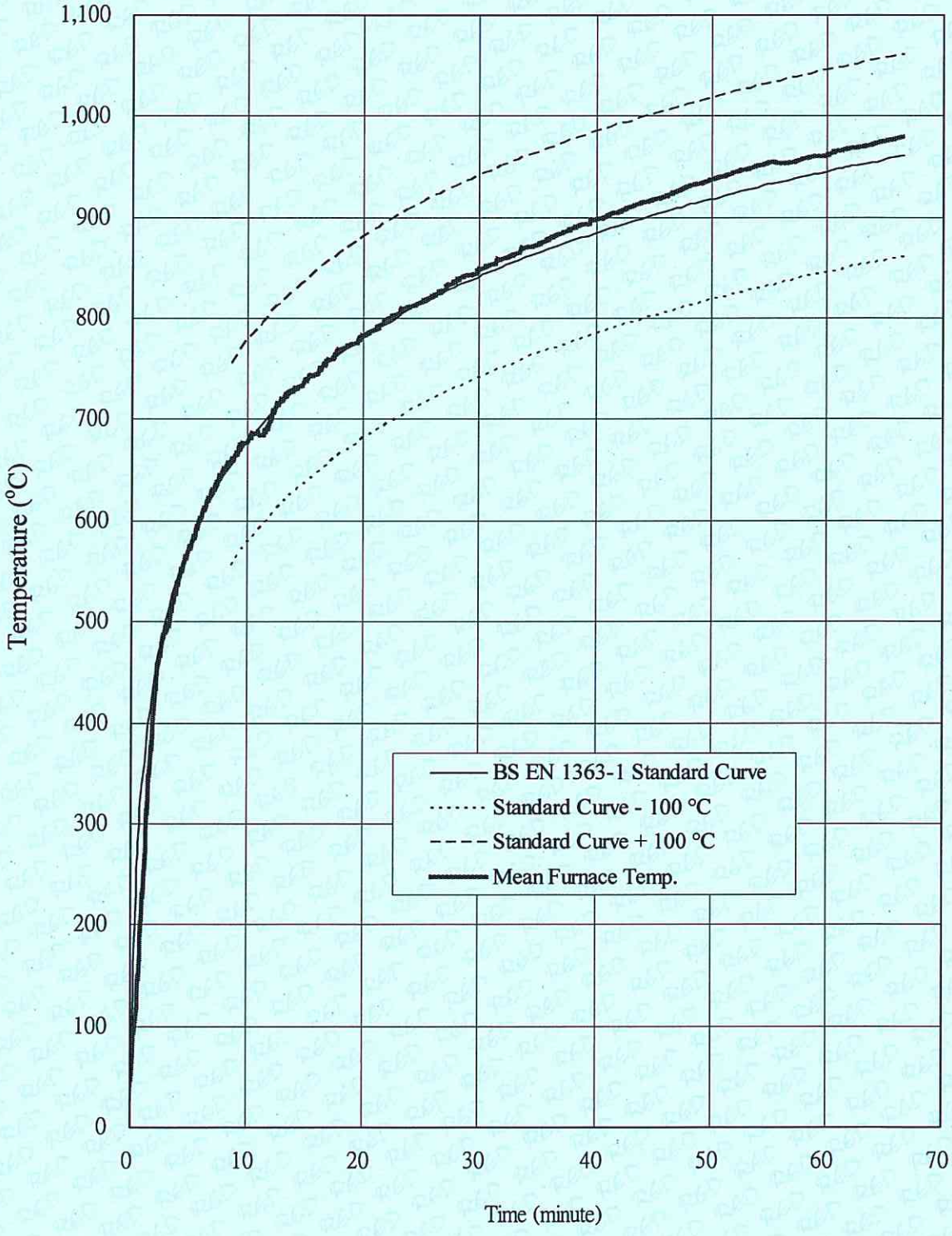


Figure 5 - Mean furnace temperatures.

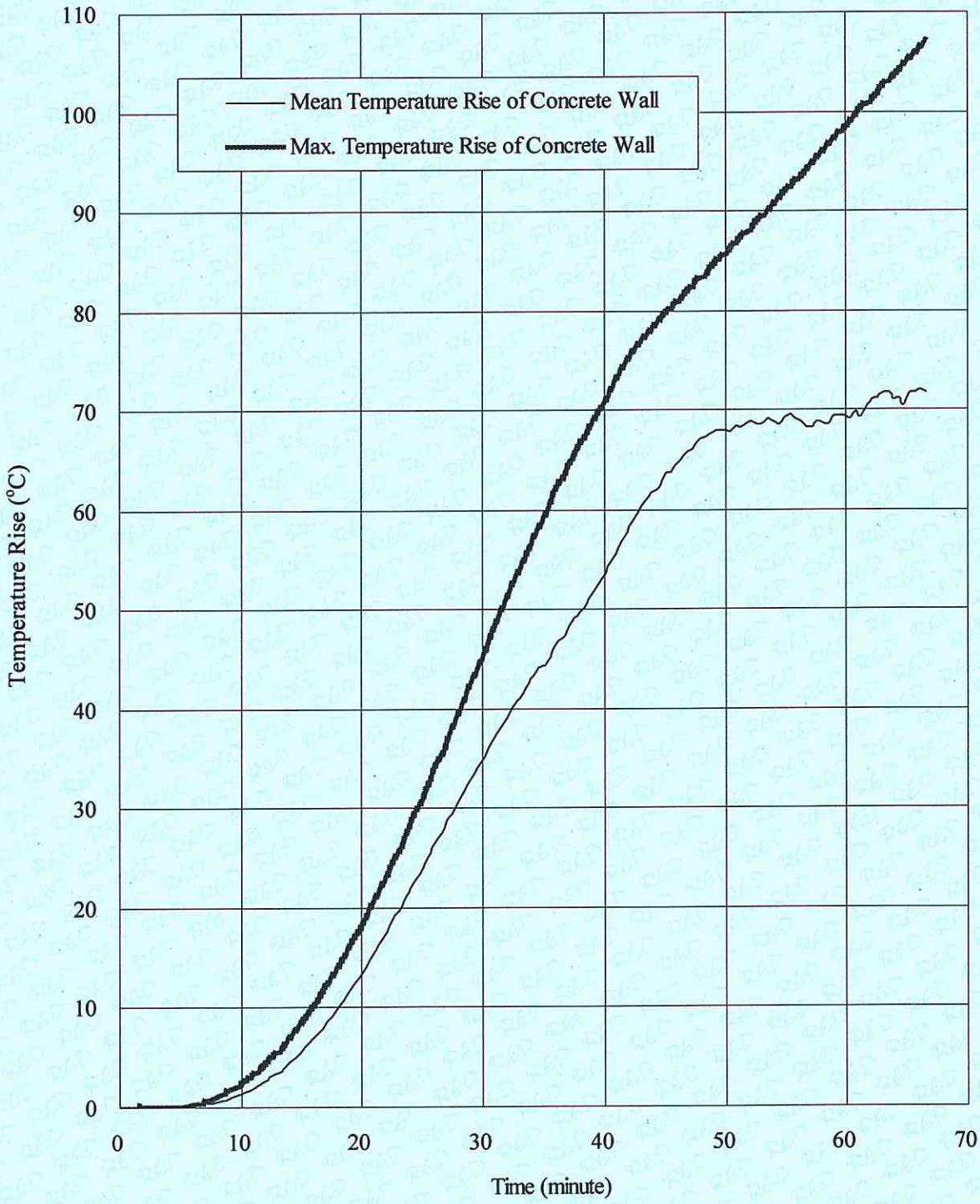


Figure 6 – Mean and maximum temperature rises of unexposed surface of concrete wall of specimen 'A'.

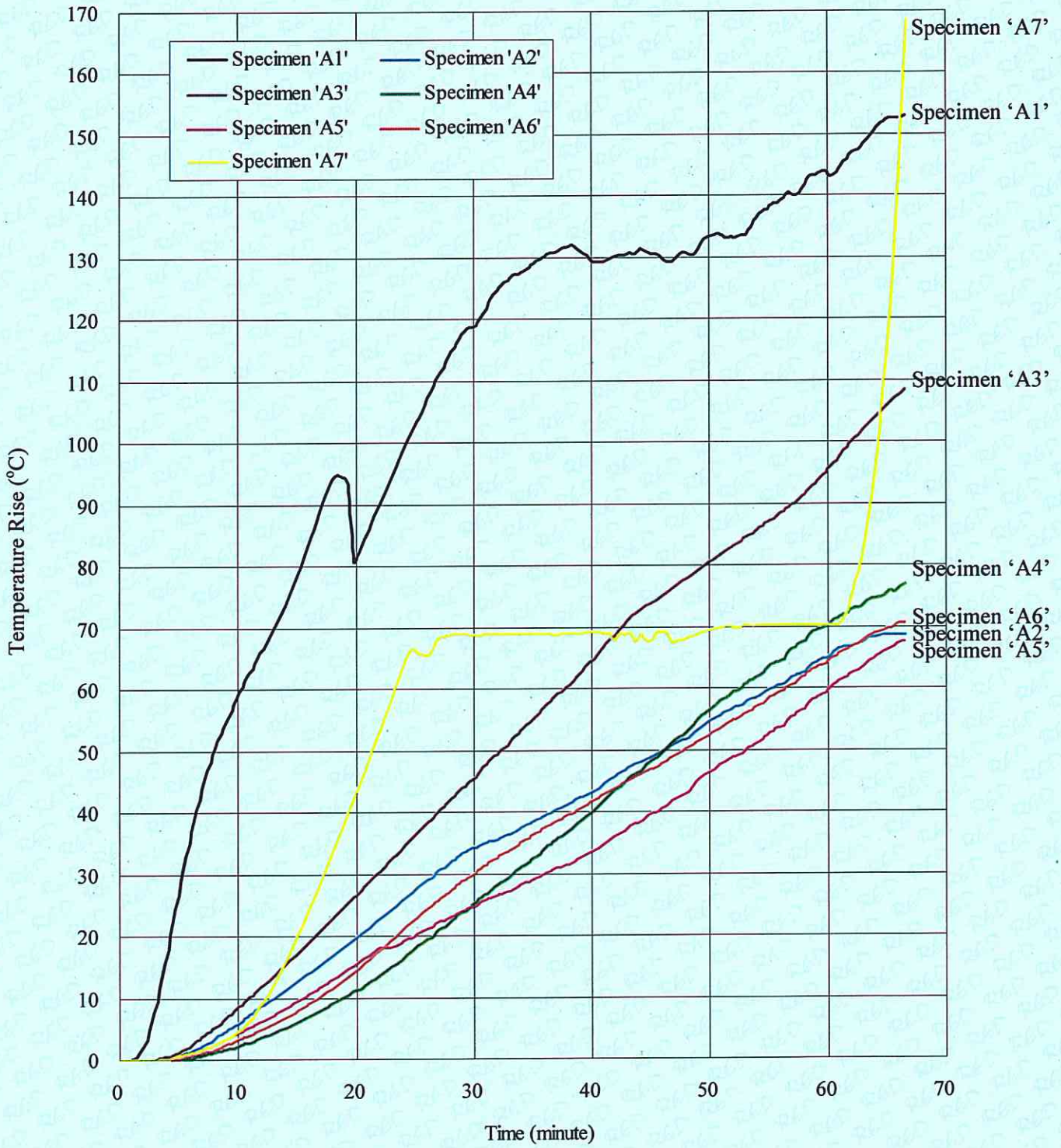


Figure 7 – Maximum temperature rises of unexposed surfaces of specimens 'A1' to 'A7'.

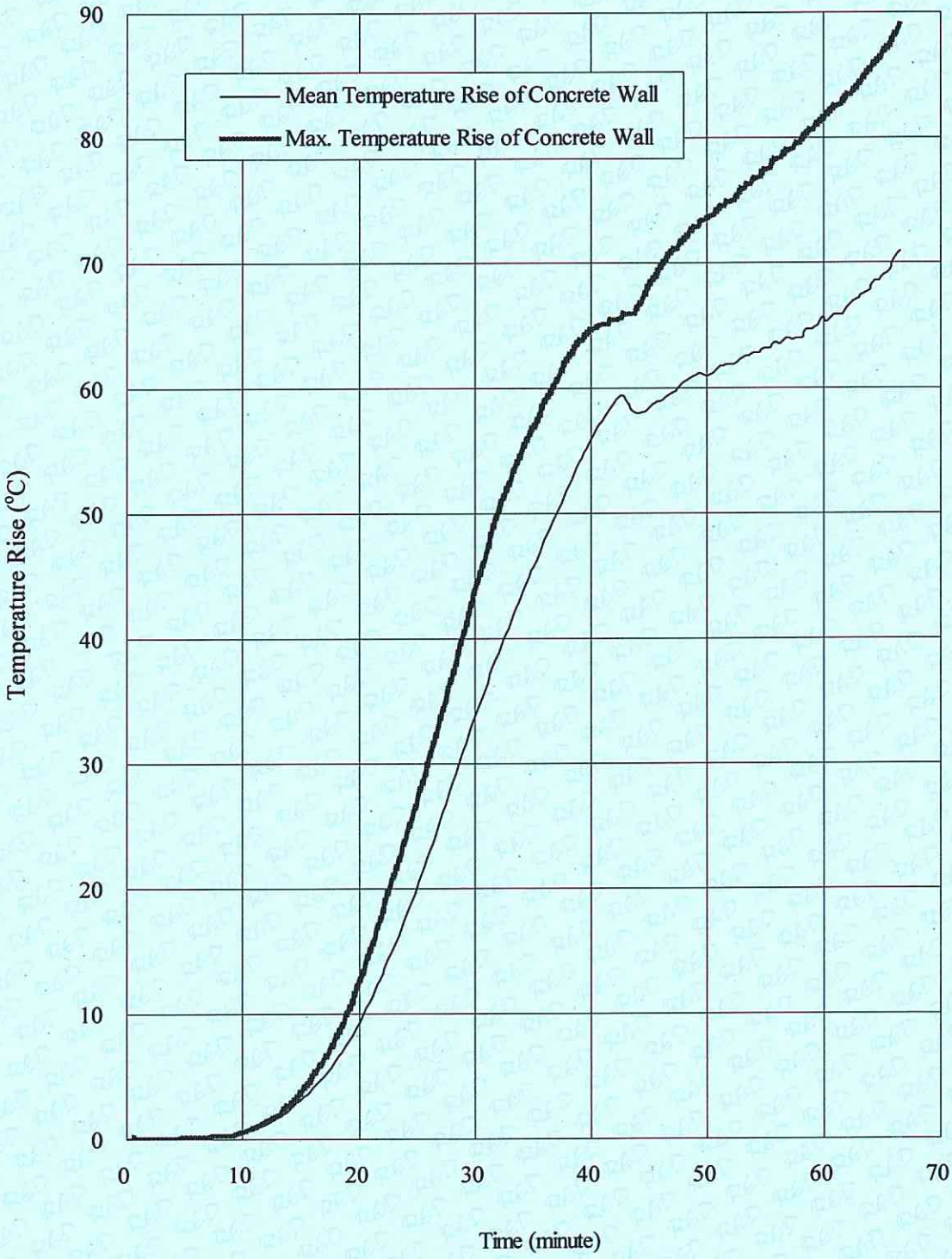


Figure 8 – Mean and maximum temperature rises of unexposed surface of concrete wall of specimen 'B'.

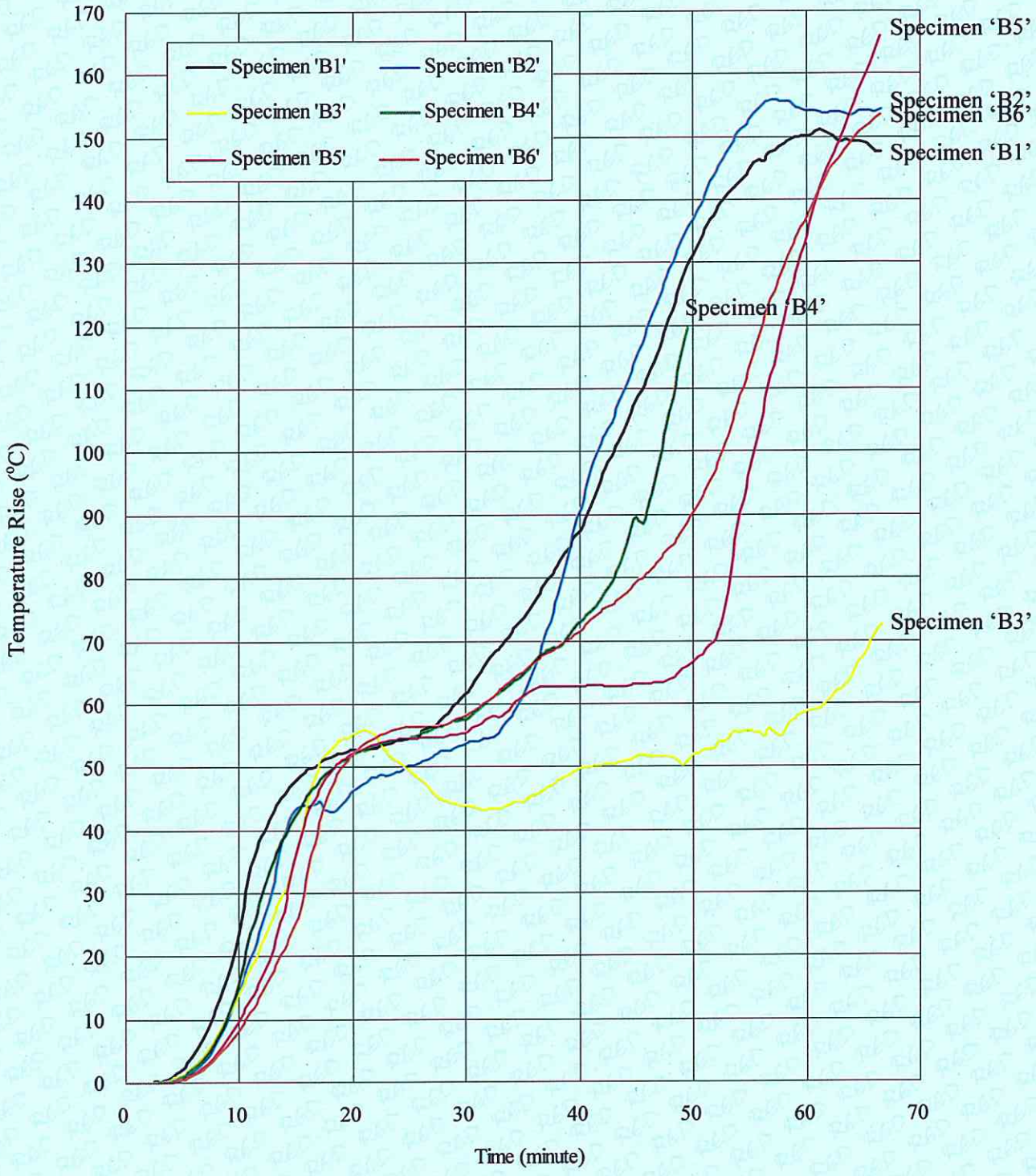


Figure 9 – Maximum temperature rises of unexposed surfaces of specimens 'B1' to 'B6'.

Note: Thermocouples S21 and S22 on specimen 'B4' detached after a heating period of 49 minutes.

The furnace pressure was maintained at 17 ± 3 Pa relative to atmosphere, at the top of specimens 'A' and 'B'.

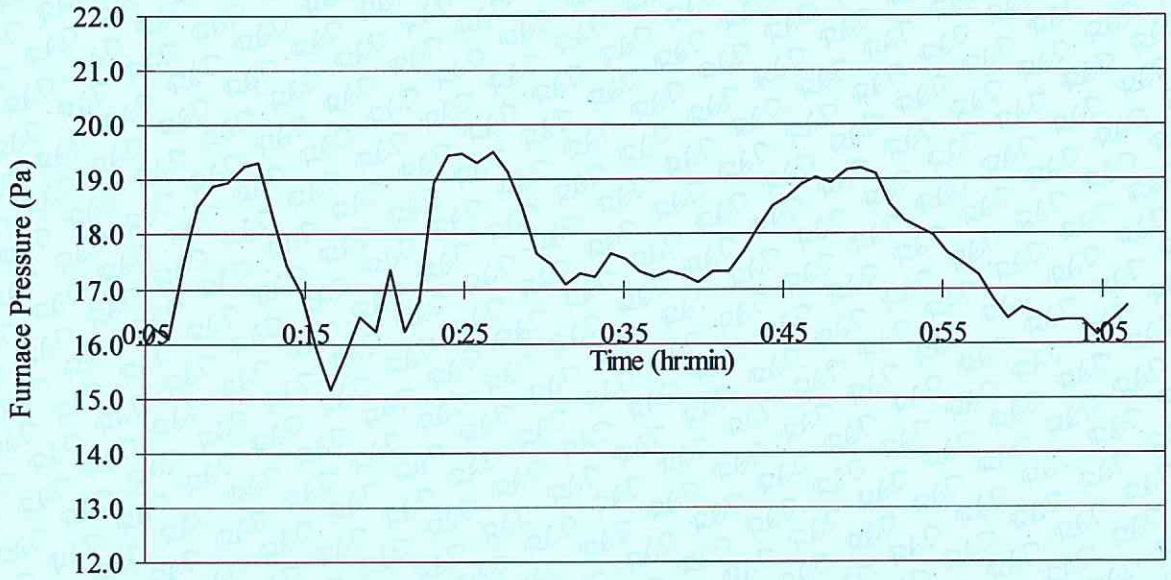


Figure 10 – Furnace pressure.

A radiometer placed at 1,000 mm away from the unexposed surface of specimen to measure the radiation of unexposed surface of the specimen.

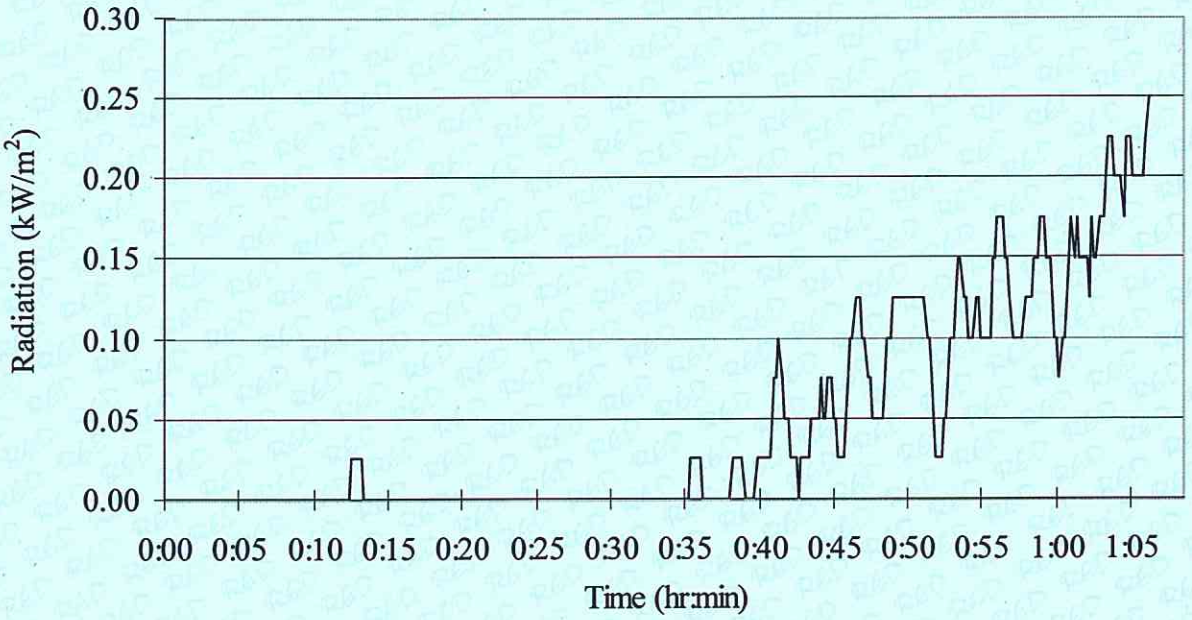


Figure 11 – Radiation.

Appendix B - Observation

Time (min.sec)	Exposed (E) or Unexposed (U)	Observation
00.00	-	Test started.
10.14	U	Smoke started releasing from the perimeter of both specimens.
11.04	U	Water marks were observed from the left portion of specimen 'B'.
11.59	U	Smoke started releasing from specimens 'B1' and 'B4'.
12.54	U	Pop sound was heard from the specimens.
15.00	U	Water marks were observed from the centre portion of specimen 'A'.
18.29	U	Pop sound was heard from the specimens.
19:39	U	Thermocouple S12 detached. Specimen 'A1' melted and the putty pad was observed.
23.03	U	Thermocouple S12 attached.
23.43	U	Thermocouple S12 detached.
24.30	U	Smoke started releasing from specimen 'A1'.
25.40	U	Water marks were observed on both specimens.
26.20	U	Smoke release further increased from both specimens. Visible deformation of both specimens was observed.
29.45	U	Cotton pad test was applied on specimen 'A1' and the test passed.
30.00	U	Specimens 'A' and 'B' satisfied the integrity and insulation requirements performance.
35.42	U	The putty pad under specimen 'A1' turned dark.
45.31	U	Further deformation was observed from specimens 'A1', 'B1' and 'B4'.
49.55	U	The putty pad on specimen 'B4' detached. Thermocouples S21 and S22 detached.
52.08	U	Cotton pad test was applied on specimen 'A1' and the test passed.
59.57	U	Cotton pad test was applied on specimen 'A1' and the test passed.
60.00	U	Specimens 'A' and 'B' satisfied the integrity and insulation requirements performance.
66.37	-	Test was terminated as requested by test sponsor.

Appendix C – Data Recorded During the Test

Table 1 - Lateral deflections of the specimen during the test, as viewed from the unexposed face.

Location \ Time (mins)	0	10	20
D1	0	7	24
D2	0	6	14

Positive deflections indicate movement towards the furnace (see also Figure 3 for the locations).
The maximum deflection of the specimen 'A' occurred at location D1 was 24 mm moving towards the furnace after a heating period of 20 minutes.
The maximum deflection of the specimen 'B' occurred at location D1 was 14 mm moving towards the furnace after a heating period of 20 minutes.

Table 2 – Mean Furnace Temperature

Time (min)	BS EN 1363-1 Standard Curve (^{o}C)	Actual Mean Furnace Temp. (^{o}C)
0	20	47
5	584	583
10	677	679
15	741	742
20	781	782
25	816	818
30	841	848
35	866	875
40	884	898
45	903	920
50	918	938
55	933	956
60	945	962
66	961	980

Notes: Locations of furnace thermocouples are shown in Figure 1.
The test was terminated as requested by the test sponsor after a heating period of 66 minutes.

Table 3 – Time and related temperature rise measured by thermocouples S1 – S15 on specimen 'A'

Time (min)	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	1	1	0	1	26	31	1	1	2
10	1	1	2	1	3	3	5	4	4	5	53	60	7	7	9
15	5	5	8	4	9	7	10	8	11	22	69	80	13	13	18
20	11	12	17	11	19	12	16	15	19	45	82	-	20	21	27
25	19	22	28	22	32	18	20	23	29	66	104	-	28	27	37
30	26	31	38	35	46	26	25	30	35	69	119	-	35	34	46
35	34	37	48	44	60	33	29	37	43	69	129	-	39	45	55
40	40	44	59	54	71	40	34	42	50	69	129	-	44	59	65
45	51	52	68	67	80	49	40	47	64	68	131	-	49	69	74
50	63	58	68	64	86	57	47	53	70	67	134	-	55	74	81
55	69	57	68	60	93	64	53	59	70	65	139	-	60	80	88
60	70	52	66	60	99	71	60	65	70	68	143	-	66	91	96
65	71	63	63	57	105	76	67	70	71	121	153	-	69	106	106
66	71	62	63	56	107	77	68	71	71	169	153	-	69	109	109

Notes: Locations of thermocouples S1 – S14 are shown in Figure 2.

Thermocouple S12 detached after a heating period of 19 minutes.

The test was terminated as requested by test sponsor after a heating period of 66 minutes.

Table 4 – Time and related temperature rise measured by thermocouples S16 – S28 on specimen 'B'

Time (min)	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28
0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	1	2	1	1	3	3	1	2
10	1	1	1	1	1	19	17	11	10	27	28	17	16
15	3	3	4	4	3	44	43	38	27	49	47	44	39
20	10	8	8	13	10	52	50	53	53	53	48	47	56
25	22	17	17	28	20	55	53	55	57	55	49	51	49
30	36	29	29	45	33	58	56	56	59	62	50	54	44
35	47	42	37	57	46	65	63	62	65	74	57	62	45
40	57	55	46	65	58	72	73	63	72	88	70	91	50
45	65	66	26	67	68	90	82	63	79	108	87	115	52
50	71	70	23	68	74	-	-	68	92	133	106	139	52
55	74	72	26	67	78	-	-	100	116	146	117	154	56
60	76	75	28	65	82	-	-	136	138	150	111	154	59
65	81	79	33	66	87	-	-	160	152	149	103	154	68
66	82	81	36	67	89	-	-	166	154	148	103	155	73

Notes: Locations of thermocouples S16 – S28 are shown in Figure 3.

Thermocouples S21 and S22 detached after a heating period of 49 minutes.

The test was terminated as requested by test sponsor after a heating period of 66 minutes.

Appendix D – Information from Test Sponsor for Specimen 'A'

(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description	
1	**Concrete Wall**	
	Overall sizes	: 1,450 mm wide by 750 mm high by 100 mm thick.*
	Composition	: Cement, sand, aggregate and water.
	Density	: Nominal 2,400 kg/m^3.*
2	**Socket Box**	
	Overall sizes	: Specimens 'A1' - 235 mm wide by 155 mm high by 50 mm deep.*
		Specimens 'A2' - 135 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'A3' - 235 mm wide by 155 mm high by 50 mm deep.*
		Specimens 'A4' - 75 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'A5' - 75 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'A6' - 135 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'A7' - 235 mm wide by 155 mm high by 50 mm deep.*
	Material	: PVC.
	Fixing method	: Cast-in within concrete wall.
3	**Intumescent Pad**	
	Manufacturer	: Hilti Corporation.
	Model	: Hilti CP 617 intumescent acoustic putty pad.#
	Thickness	: 3 mm.*
	Material	: Fire prevention compound with Polyisobutylene agent base.
	Applied Location	: Applied at the back of socket boxes of specimens 'A1', 'A2', 'A3' & 'A5'; and inside the socket boxes of specimens 'A4', 'A6' and 'A7'.*

*Notes: * Verified on site by RED.*

\# As shown on the test construction.

Appendix D – Information from Test Sponsor for Specimen 'B'

(The information provided by test sponsor, which is not verified by RED or unless specified.)

Item	Description	
1	**Concrete Wall**	
	Overall sizes	: 1,450 mm wide by 750 mm high by 100 mm thick.*
	Composition	: Cement, sand, aggregate and water.
	Density	: Nominal 2,400 kg/m^3.*
2	**Socket Box**	
	Overall sizes	: Specimens 'B1' - 235 mm wide by 155 mm high by 50 mm deep.*
		Specimens 'B2' - 135 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'B3' - 75 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'B4' - 235 mm wide by 155 mm high by 50 mm deep.*
		Specimens 'B5' - 135 mm wide by 75 mm high by 50 mm deep.*
		Specimens 'B6' - 75 mm wide by 75 mm high by 50 mm deep.*
	Material	: PVC.
	Fixing method	: Cast-in within concrete wall.
3	**Intumescent Pad**	
	Manufacturer	: Hilti Corporation.
	Model	: Hilti CP 617 intumescent acoustic putty pad.#
	Thickness	: 3 mm.*
	Material	: Fire prevention compound with Polyisobutylene agent base.
	Applied Location	: Applied at the back of socket boxes of specimens 'B1', 'B2' & 'B3'; and inside the socket boxes of specimens 'B4', 'B5' and 'B6'.*

Notes: ** Verified on site by RED.*

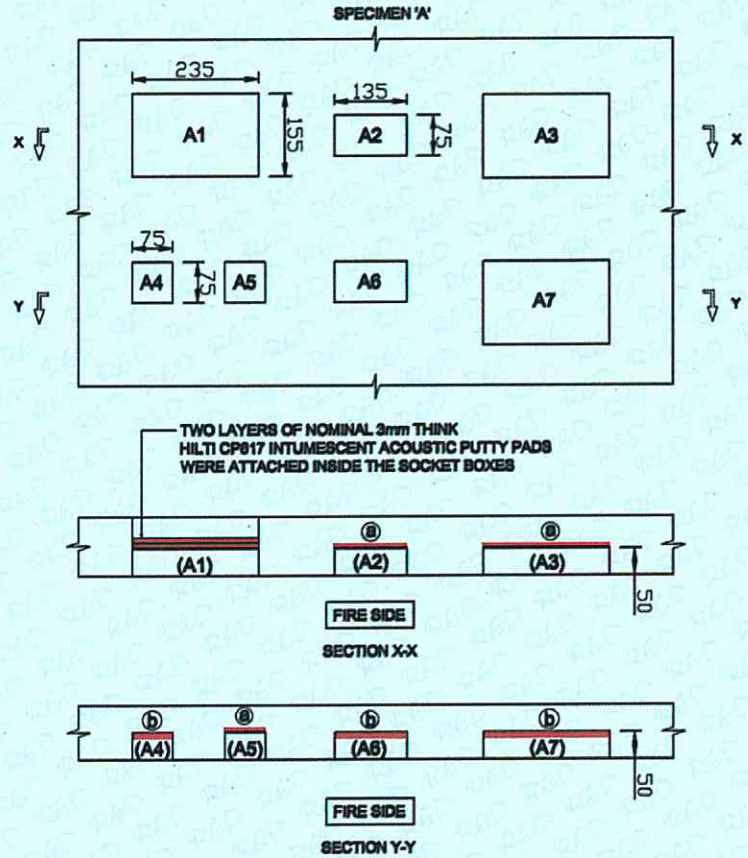
\# As shown on the test construction.

Drawing from Test Sponsor

(The drawing provided by client, which is not verified by RED, except those specified and described in 'Appendix D - Information from Test Sponsor'.)

FIRE RESISTANCE TEST OF INTUMESCENT PUTTY PAD

TEST LABORATORY	: RESEARCH ENGINEERING DEVELOPMENT FACADE CONSULTING LIMITED
TEST SPONSOR	: HILTI (HK) LTD
PRODUCT USED	: CP617 INTUMESCENT ACOUSTIC PUTTY PAD
TEST STANDARD	: EN 1364-1:1999
FIRE RESISTANCE RATING	: UP TO - / 60 / 60



Hilti Firestop Systems	HILTI (HONG KONG) LTD.	Sheet 1 OF 2	Drawing No. SD_018
	RICK CHAN	Scale NTS	
		Date 29th AUG, 2013	

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FIRE RESISTANCE TEST OF INTUMESCENT PUTTY PAD

TEST LABORATORY	: RESEARCH ENGINEERING DEVELOPMENT FACADE CONSULTING LIMITED
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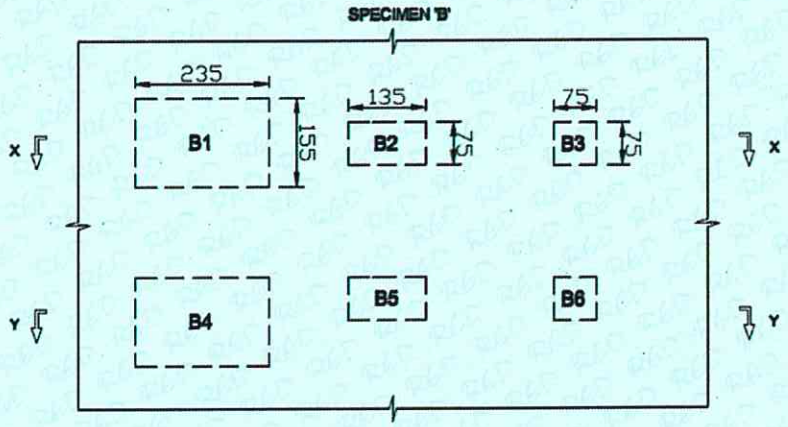
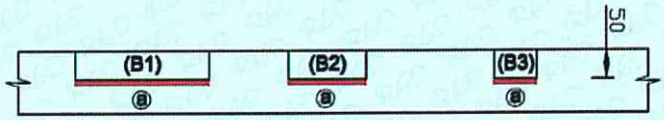
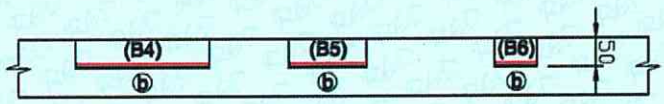




FIRE SIDE

SECTION X-X



FIRE SIDE

SECTION Y-Y

ⓐ A LAYER OF NOMINAL 3mm THINK HILTI CP617 INTUMESCENT ACOUSTIC PUTTY PAD WAS ATTACHED TO THE BACK OF THE SOCKET BOX

ⓑ A LAYER OF NOMINAL 3mm THINK HILTI CP617 INTUMESCENT ACOUSTIC PUTTY PAD WAS ATTACHED INSIDE THE SOCKET BOX

Hilti Firestop Systems	HILTI (HONG KONG) LTD.	Sheet 2 OF 2	Drawing No. SD_018
	RICK CHAN	Scale NTS	
		Date 29th AUG, 2013	

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- End of report -

ASSESSMENT REPORT

Fire Resistance Performance of Wall Incorporated with Socket Box(es) protected with Hilti "CP617" Firestop Putty Pad

Report No.: R23D26-1A Issue 1

Issue Date: 7 October, 2024

Date of Review: 27 June, 2026

Report Sponsor

Hilti (Hong Kong) Limited
701-704 & 708B, Tower A Manulife Finance Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, HK

CONTENT

REVISION HISTORY

Issue date (DD/MM/YYYY)	Issue number	Remark
28/06/2023	0	Initial version
07/10/2024	1	Revision of drawings as shown in the appendix section

FIRE RESISTANCE PERFORMANCE OF WALL SYSTEMS INCORPORATED WITH SOCKET BOXES PROTECTED WITH HILTI "CP 617" FIRESTOP PUTTY PAD

1 INTRODUCTION

This assessment report presents an appraisal for the fire resistance performance of wall system incorporated with the socket box(es) protected with Hilti "CP 617" firestop putty pad that was tested under the reference R13H36 and R18G14-2A issued by Research Engineering Development Façade Consultants Limited (RED) and WF report no.: 167424, 167427, 167428 and 167429 issued by Warringtonfire. It is prepared for Hilti (Hong Kong) Limited of 701-704 & 708B, Tower A, Manulife Finance Centre, 223 Wai Yip Street, Kwun Tong, Kowloon, HK.

The proposed sealing systems are required to provide a fire resistance performance of up to 240 minutes integrity with or with insulation performance with respect to BS 476: Part 20/22: 1987.

2 ASSUMPTIONS

The proposed systems are assumed to be installed in a similar manner to that of the previously tested system by competent installers. It is assumed that the modified systems will be constructed in a similar manner from materials and components of the same manufacture and equivalent quality as tested with supporting test evidence or otherwise appraised by RED. Further assumptions related to the specific modifications will be stated in the report.

It is also assumed that the supporting structures to which the perimeter of the systems will be fixed are capable of supporting the proposed structure effectively.

Assuming that the issue of the original test report is valid, the current testing standard or testing experience has not been changed and the procedures adopted for the original report have been re-examined and reviewed that there have been no changes to the specification of the construction considered in the original report. If contradictory data or any related evidence becomes available to RED, the assessment will be unconditionally withdrawn and the sponsor will be notified. This report is based on the given information, in which is declared by report sponsor that no contradictory data has become available.

3 SUPPORTING DATA

3.1 Summary of Supporting Test Evidence

Report no.	Sections	Description
RED test report no. R13H36	4.1	Supporting test evidence for the use of Hilti "CP617" putty pad for sealing the electrical sockets within the concrete wall construction.
RED test report no. R18G14-2A	4.1	Supporting test evidence for the use of Hilti "CP617" putty pad for sealing the electrical sockets within the AAC block wall construction.
Secondary Test Evidence		
WF No. 164724	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164727	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164728	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164729	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.

3.2 Primary Test Evidence

3.2.1 RED Test Report No. R13H36*

A fire resistance test in accordance with BS EN 1364-1: on two specimens of concrete wall incorporated various arrangement of socket box(es) protected with the Hilti "CP617" firestop putty pad was performed at the RED Laboratory on 29th August, 2013. The test sponsor was Hilti (Hong Kong) Limited. As requested by the test sponsor, the specimens were mounted within concrete lined specimen holder by the test sponsor. Specimens 'A' and 'B' were asymmetrical and the fire side of specimens were determined by the test sponsor.

Specimen 'A' had overall dimensions of 1,450 mm wide by 750 mm high by 100 mm thick. It was comprised of a concrete wall with 8 nos. of cast-in socket boxes, namely specimens 'A1' to 'A7', facing towards the exposed side. Specimen 'A1' was comprised of 2 nos. of cast-in socket boxes, each with overall sizes of 235 mm wide by 155 mm high by 50 mm deep facing back-to-back with each other. Two layers of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pads were attached to the back of the cast-in socket boxes by its self-adhesive ability. Specimens 'A2', 'A3' and 'A5' were comprised of cast-in socket boxes, with overall sizes of 135 mm wide by 75 mm high by 50 mm deep, 235 mm wide by 155 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'A4', 'A6' and 'A7' were comprised of cast-in socket boxes, with overall sizes of 75 mm wide by 75 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 235 mm wide by 155 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached inside each cast-in socket box by its self-adhesive ability.

Specimen 'B' had overall dimensions of 1,450 mm wide by 750 mm high by 100 mm thick. It was comprised of a concrete wall with 6 nos. of cast-in socket boxes, namely specimens 'B1' to 'B6', facing towards the unexposed side. Specimens 'B1', 'B2' and 'B3' were comprised of cast-in socket boxes, with overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'B4', 'B5' and 'B6' were comprised of cast-in socket boxes, with overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' intumescent acoustic putty pad was attached inside each cast-in socket box by its self-adhesive ability.

The specimens satisfied the performance requirements specified in BS EN 1364-1: 1999, for the following periods:

Specimen 'A'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'A1'):		**66** Minutes
Insulation (Specimens 'A2'):		**66** Minutes
Insulation (Specimens 'A3'):		**66** Minutes
Insulation (Specimens 'A4'):		**66** Minutes
Insulation (Specimens 'A5'):		**66** Minutes
Insulation (Specimens 'A6'):		**66** Minutes
Insulation (Specimens 'A7'):		**66** Minutes

Specimen 'B'

Integrity:	**Cotton Pad**	**66** Minutes (No failure)
	Gap Gauge	**66** Minutes (No failure)
	Sustained Flaming	**66** Minutes (No failure)
Insulation (Concrete wall only):		**66** Minutes
Insulation (Specimens 'B1'):		**66** Minutes
Insulation (Specimens 'B2'):		**66** Minutes
Insulation (Specimens 'B3'):		**66** Minutes
Insulation (Specimens 'B4'):		**66** Minutes
Insulation (Specimens 'B5'):		**66** Minutes
Insulation (Specimens 'B6'):		**66** Minutes

The test was discontinued after a period of 66 minutes (See RED report no. R13H36 for details).

*Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS EN 1364-1: 1999 and found it suitable for this assessment.

3.2.2 *RED Test Report No. R18G14-2A^*

A fire resistance test in accordance with BS 476: Part 20: 1987 on nine specimens of penetration sealing systems, referenced Specimens '12' to '20' and among the specimens, only specimen "15" is the use of Hilti "CP617"related to this appraisal, was performed at the RED Laboratory on 28th September, 2018. The test sponsor was Hilti (Hong Kong) Limited. As requested by the test sponsor, the specimens were mounted within concrete line specimen holder. The specimens were asymmetrical and only one side of specimens was tested, in which the fire side was determined by the test sponsor.

Specimen '15' had overall dimensions of 600 mm wide by 300 mm high by 81 mm thick. It was comprised of two nos. of socket boxes with 'Hilti CP617' firestop putty pad incorporated with 75 mm thick 'Ytong' lightweight block wall with nominal 3 mm thick plaster on both sides. Each socket box with cover with sizes of 70 mm by 70 mm by 50 mm deep by 3.5 mm thick was incorporated in each side of block wall. 'Hilti CP617' firestop putty pad was placed inside the socket boxes (refer to test sponsor's drawings).

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	**Insulation**
Specimen '15'	**242** Minutes (No failure)	**242** Minutes

The test was discontinued after a heating period of 242 minutes (See Report R18G14-2A for full details).

^Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS 476: Part 20: 1987 and found it suitable for this assessment.

3.3 Secondary Test Evidence

3.3.1 WF Test Report No. 167424^

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated the self-adhesive putty pad moulded over the face of each back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm.

Specimen 'B' incorporated the self-adhesive putty pad moulded internally within each back box.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 109 °C after 120 minutes.

The test was discontinued after a heating period of 184 minutes (See WF report no. 167424 for full details).

^Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS EN 1363-1 and found it suitable for this assessment.

3.3.2 *WF Test Report No. 167427^*

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated the self-adhesive putty pad moulded over the face of each back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm.

Specimen 'B' incorporated the self-adhesive putty pad moulded internally within each back box.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 111 °C after 120 minutes.

The test was discontinued after a heating period of 164 minutes (See WF report no. 167427 for full details).

^See note on page 10.

3.3.3 *WF Test Report No. 167428^*

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'exposed' face. In addition Specimen 'A' incorporated a self-adhesive putty pad moulded internally within the back box on the 'unexposed' face of the drywall.

Specimen 'B' incorporated a self-adhesive putty pad moulded over the face of the back box within the

drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'unexposed' face. In addition Specimen 'B' incorporated a self-adhesive putty pad moulded internally within the back box on the 'exposed' face of the drywall.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 92 °C after 120 minutes.

The test was discontinued after a heating period of 149 minutes (See WF report no. 167428 for full details).

^See note on page 10.

3.3.4 *WF Test Report No. 167429^*

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'exposed' face. In addition, Specimen 'A' incorporated a self-adhesive putty pad moulded internally within the back box on the 'unexposed' face of the drywall.

Specimen 'B' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'unexposed' face. In addition, Specimen 'B' incorporated a self-adhesive putty pad moulded internally within the back box on the 'exposed' face of the drywall.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 99 °C after 120 minutes.

The test was discontinued after a heating period of 149 minutes (See WF report no. 167429 for full details).

^See note on page 10.

4 PROPOSAL & DISCUSSION

4.1 The use of test evidence for the firestop sealing systems, which were tested in accordance with BS EN 1364-1: 1999, are applicable for the assessment against BS 476: Part 20/22: 1987

Proposal

It is proposed that the test evidence R13H36 for the concrete wall system incorporated with socket box(es) protected with Hilti 'CP617' putty pad, which were tested in accordance with BS EN 1364-1: 1999, is suitable for use in the assessment against BS 476: Part 20/22: 1987.

Discussion

The fire tests on the fully insulated wall systems incorporated with socket box(es) protected with the Hilti 'CP617' putty pad as tested and described in the above mentioned report was carried out in accordance with BS EN 1364-1: 1999. In reviewing the tests, we have considered the Design and installation of the specimens, the surrounding construction, the initial furnace temperature, the pressure in the furnace, the changes in the integrity criteria and the behaviour of the fire tests, it is expected that if these fire tests had been conducted in accordance with BS 476: Part 20/22: 1987 very similar results would have been achieved.

Fire tests to BS EN 1364-1: 1999 and BS 476: Part 20/22: 1987 have the same furnace temperature-time curve, i.e., the standard ISO temperature time curve represented by $T = 345 \log_{10}(8t + 1) + 20$, where T is the furnace temperature rise and t is the time of heating conditions. However, a more severe overpressure requirement of 5 Pa required by BS EN 1364-1: 1999 was used, which was normally deemed to be more onerous. The passing criteria for the standards of BS EN 1364-1: 1999 and BS 476: Part 20/22: 1987 are summarised as follows:

Integrity. Monitor the unexposed face of the specimen for evaluation of integrity. A failure of the test construction to maintain integrity occurs when collapse or sustained flaming on the unexposed face occurs or impermeability is exceeded.

Insulation. Failure occurs when (a) the mean unexposed face temperature increases by more than 140 °C above its initial value; or (b) the temperature recorded at any position on the unexposed face is in excess of 180 °C above its initial value; or (c) when integrity failure occurs.

Having stated these criteria, there is no difference between the tests to BS EN and British standards. Since the integrity and insulation criteria of BS EN 1364-1: 1999 and BS 476: Part 20/22: 1987 are basically the same, we can conservatively conclude that the fully insulated single-acting, unequal double-leaf composite timber doorsets as tested and described in those test evidence will achieve fire resistance performance not worse than tested if test to BS 476: Part 20/22: 1987.

4.2 Fire Resistance Performance of Wall Systems Incorporated with Socket Box(es) protected with Hilti CP 617 Firestop Putty Pad for up to 240 Minutes Integrity and Insulation Performance with respect to BS 476: Part 20/22: 1987

Proposal

It is proposed that Hilti 'CP617' firestop putty pad may be used to protect socket box(es) that will be incorporated within the walls system with the proposed application conditions for the required fire resistance performance as stated below:

(a) Reinforced concrete (RC) wall with minimum thickness of 100 mm, incorporated with maximum 50 mm deep plastic socket box (es). One layer of 3 mm thick Hilti 'CP 617' may be applied on either inside or outside of each socket box, and the socket box may be back-to-back or staggered within the wall. The system shall maintain 60 minutes integrity and insulation performance;

(b) AAC blockwork walls with minimum thickness of 75 mm, incorporated with maximum 50 mm deep plastic socket box (es). One layer of 3 mm thick Hilti 'CP 617' may be applied on either inside or outside of each socket box, and the socket box may be staggered within the wall. The system shall maintain up to 240 minutes integrity and insulation performance, depends on the fire resistance performance of the wall supported by separate test evidence. For the condition that the socket boxes will be applied under the back-to-back condition, the fire resistance performance confined to 120 minutes integrity and insulation performance only;

(c) Drywall partition systems that composed of minimum 50 mm wide stud's web, incorporated with maximum 50 mm deep plastic socket box (es). One layer of 3 mm thick Hilti 'CP 617' may be applied on either inside or outside of each socket box, and the socket box may be back-to-back or staggered within the wall. The system shall maintain up to 120 minutes integrity and insulation performance, depends on the fire resistance performance of the wall supported by separate test evidence. The scope applies to steel socket box(es) as well, but the scope confined to integrity performance only; and

(d) The above appraised scenarios, applies to steel socket box(es) as well.

This assessment is appraised against BS 476: Part 20/22: 1987.

Discussion

The test evidence R13H36 described the test of the socket boxes that incorporated within a 100 mm thick reinforced concrete wall. Two 100 mm thick reinforced concrete wall each incorporated with the socket boxes protected with the Hilti 'CP617'putty pad on either inside or outside of the socket box and located on either exposed or unexposed were tested in accordance with BS EN 1364-1: 1999. All the situations had achieved 66 minutes integrity and insulation performance.

The test evidence R18G14-2A described the test of various sealing system while Specimen '15' was a 75

mm thick 'Ytong' AAC block incorporated with the 50 mm deep plastic socket box protected with the Hilti 'CP 617' firestop putty pad placed to the inner side of the socket box. The system had achieved 240 minutes integrity and insulation performance with respect to BS 476: Part 20/22: 1987.

The test evidence WF report no. 167424, 167427. 167428 and 167429 are the tests described the plastic socket boxes installed within a gypsum boards drywall partition system in various configuration. The tests were conducted under an indicative basis in which the temperature on the unexposed face of the system was assessed.

The proposed designs as quoted in the proposal section are basically adopting the tested condition with minor modification with conservative consideration.

(a) The proposed application is basically referenced to the tested condition in the test evidence R13H36, the socket boxes incorporated within the 100 mm thick RC wall. For the specimen A, a total of 8 nos. of socket boxes were incorporated. Specimen 'A1' was comprised of 2 nos. of cast-in socket boxes, each with overall sizes of 235 mm wide by 155 mm high by 50 mm deep facing back-to-back with each other. Two layers of nominal 3 mm thick 'Hilti CP617' putty pads were attached to the back of the cast-in socket boxes by its self-adhesive ability. Specimens 'A2', 'A3' and 'A5' were comprised of cast-in socket boxes, with overall sizes of 135 mm wide by 75 mm high by 50 mm deep, 235 mm wide by 155 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'A4', 'A6' and 'A7' were comprised of cast-in socket boxes, with overall sizes of 75 mm wide by 75 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 235 mm wide by 155 mm high by 50 mm deep respectively and all with the opening facing towards the exposed side. A layer of nominal 3 mm thick 'Hilti CP617' putty pad was attached inside each cast-in socket box by its self-adhesive ability. Specimen 'B' had overall dimensions of 1,450 mm wide by 750 mm high by 100 mm thick. It was comprised of a concrete wall with 6 nos. of cast-in socket boxes, namely specimens 'B1' to 'B6', facing towards the unexposed side. Specimens 'B1', 'B2' and 'B3' were comprised of cast-in socket boxes, with overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' putty pad was attached to the back of each cast-in socket box by its self-adhesive ability. Specimens 'B4', 'B5' and 'B6' were comprised of cast-in socket boxes, with overall sizes of 235 mm wide by 155 mm high by 50 mm deep, 135 mm wide by 75 mm high by 50 mm deep and 75 mm wide by 75 mm high by 50 mm deep respectively, with the opening facing towards the unexposed side. A layer of nominal 3 mm thick 'Hilti CP617' putty pad was attached inside each cast-in socket box by its self-adhesive ability.

The proposed installation method of the Hilti "CP617" are referenced to all the tested condition above and is therefore considered as support by direct test evidence.

(b) The test evidence R18G14-2A described the test of the plastic socket boxes that protected with one layer of 3 mm thick Hilti 'CP617' one socket box was installed on each side of the wall. Based on this test evidence, the 75 mm thick AAC blockwork wall, with the mortise of the required volume for the socket boxes on either the exposed or unexposed side shall behave similarly. While for the socket boxes installed at the back-to-back scenarios, the situation had been tested in the evidence WF report nos. 167424, 167427, 167428 and 167429 and achieved an indicative performance of 120 minutes integrity and insulation. The tested situation was within the partition wall system, the socket boxes were installed back-to-back via a though aperture with only the socket boxes and the two layers of 3 mm thick Hilti "CP 617" to fill up the aperture. The proposed supporting construction in this scope is the AAC blockwork wall which is considered as a rigid supporting construction compares to the partition wall. The tested result of the back-to-back socket boxes situation shall also apply.

(c) The scenario that the plastic socket boxes installed within the drywall partition systems was tested in the test evidence WF report nos. 167424, 167427, 167428 and 167429. These original test evidences were regard as the indicative tests that using the general principle as stated in BS EN 1364-1 or BS EN 1363-1. These indicative results combine with the formal test results of a full-scale partition wall system is regarded as a valid appraisal for the use in practice. The test evidence already shown the socket boxes installed on either exposed or unexposed, and with the Hilti 'CP617' putty pad lined either inside or outside the socket boxes. The proposed installation method for the Hilti 'CP617' is also considered as acceptable.

(d) All the tested electrical socket boxes were of plastic construction and it is proposed that steel boxes may be used as an alternative. Since the steel socket boxes will not be subject to melting, charring or ignition, it is therefore believed that the no deterioration influence to the achieved or appraised integrity performance. However, the heat conductivity of the steel component is high and without the proper design of thermal break, the insulation performance is likely can't be achieved. The appraisal for the use of the steel socket boxes is therefore confined to the situation for providing integrity performance only.

5 CONCLUSION

The proposed use of Hilti "CP 617" firestop putty pad to protect the socket box(es) within the masonry or drywall supporting construction with the proposed scope as discussed in Section 4 of this report, is capable to maintain the fire resistance performance of up to 240 minutes integrity and insulation performance with respect to BS 476: Part 20/22: 1987.

6 DECLARATION BY APPLICANT

We, Hilti (Hong Kong) Limited, confirm that the material, component or element of structure, which is the subject of the test report being reviewed, has not to our knowledge been subjected to another test to the standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of another test to the standard against which the assessment is being made.

We are not aware of any information that could affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

7 VALIDITY

This assessment is based on test data, experience and the information supplied. The assessment will be invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. Any changes in the specification of product will invalidate this assessment. This assessment relates only to the specimen assessed and does not by itself infer that the product is approved under any other endorsements, approval or certification scheme. Since the appraisal method is under development, the laboratory reserved the right to supersede this assessment in case the appraisal method had been changed.

This report only relates to the specimen(s) tested and may only be reproduced by the sponsor in full, without comment, abridgement and modifications.

8 SIGNATORIES

Assessment by:

Dr. SZE Lip-kit
Authorized Signature
Research Engineering Development
Façade Consultants Limited

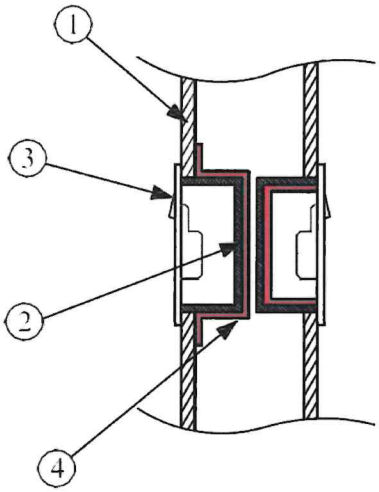
Reviewed by:

Ir Dr. YUEN Sai-wing, MHKIE (Fire)
Authorized Signature
Research Engineering Development
Façade Consultants Limited

APPENDIX – DRAWINGS PROVIDED BY THE CLIENT

Drawing refers to Section 4 on socket box application by using CP617 (1 of 2)

FIRE RESISTANCE RATING: UP TO -/120/120

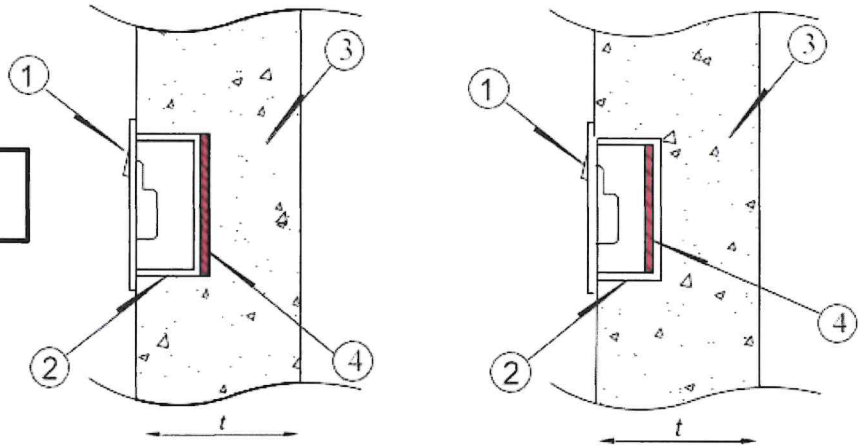


1. DRYWALL ASSEMBLY
2. SINGLE OR MULTIPLE OF SOCKET BOX (PLASTIC OR STEEL)
3. SWITCH / SOCKET FRONT COVER.
4. MINIMUM 3mm CP 617 PUTTY PAD TO BE INSTALLED TO COMPLETELY COVER THE EXTERIOR SURFACES OF THE OUTLET BOX AND OVERLAPPING SLIGHTLY TO THE INNER SURFACE OF THE DRYWALL

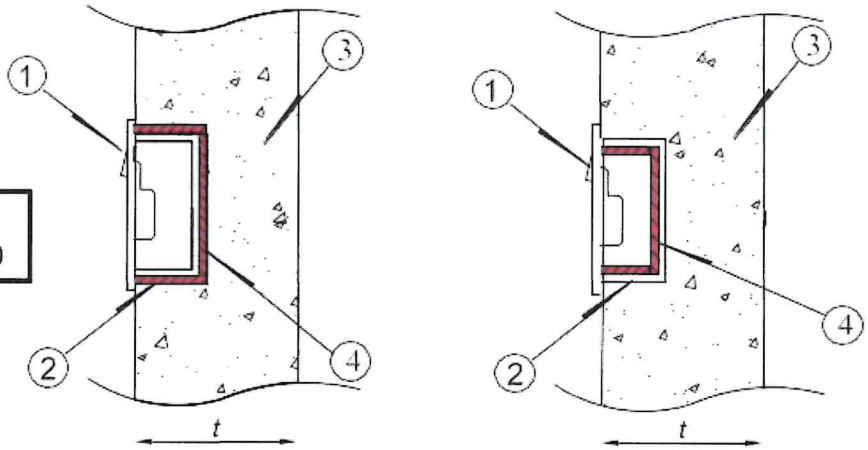
Drawing refers to Section 4 on socket box application by using CP617 (2 of 2)

FIRE RESISTANCE RATING: UP TO - /240/240

Scenario 1
Up to -/66/66



Scenario 2
Up to -/240/240



1. SWITCH / SOCKET FRONT COVER
2. SINGLE OR MULTIPLE OF SOCKET BOX (PLASTIC OR STEEL)
3. AAC BLOCKWALL / CONCRETE WALL
4. **CP 617 PUTTY PAD**

CODE OF PRACTICE FOR FIRE SAFETY IN BUILDING 2011 (TABLE E2)

CONSTRUCTION AND MATERIALS	MINIMUM THICKNESS IN MM (EXCLUDING PLASTER) FOR FRR OF		
	240 mins	120 mins	60 mins
1- REINFORCED CONCRETE CONTAINING NOT LESS THAN 1 PERCENT OF VERTICAL REINFORCEMENT	180	100	75

- End of Report -

Evidence of Performance

Airborne sound insulation of fire protection products

Test Report
20-001229-PR01

(PB 01-E03-04-en-01)

Client	Hilti Entwicklungsgesellschaft mbH Hiltistr. 6 86916 Kaufering Germany
Product	Mastic variants for electrical boxes in drywall unit
Designation	Hilti Firestop Putty Pad CP 617XL 9” × 9”
Material Mastic compound	Sealing pads made of butyl rubber
Drywall-Unit	2 × 12.5 mm gypsum board 2 metal frames 50 mm, decoupled 2 × 12.5 mm gypsum board 3 × 40 mm mineral fibre insulation in cavity
Dimensions electrical box (WxHxD)	100 mm × 100 mm × 55 mm
Special features	6 variants with electrical boxes and sealing pads

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
01.10.2020

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

Florian Dangl, Dipl.-Ing. (FH)
Operating Testing Officer
Building Acoustics

Basis

EN ISO 10140-1: 2016
EN ISO 10140-2: 2010
EN ISO 717-1: 2013

ASTM E 90-09
ASTM E 413-10

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.

Contents

The report contains a total of 24 pages

ift Rosenheim GmbH
Theodor-Gietl-Str. 7-9
D-83026 Rosenheim

Contact
Phone: +49 8031 261-0
Fax: +49 8031 261-290
www.ift-rosenheim.de

1 Object

1.1 Description of test specimen

Product	Mastic variants for electrical boxes in drywall unit
Product designation	Hilti Firestop Putty Pad CP 617XL 9” × 9”
Material*	Sealing pads made of butyl rubber
Density*	1.6 g/cm²
Product description*	A moldable firestop putty designed to help protect electrical outlet boxes, junction boxes, and large steel boxes
Electrical box	box for electrical installation mounted in dry wall
Dimensions	100 mm × 100 mm × 55 mm, steel thickness 1,8 mm
Material	galvanized steel
Cover for electrical box	
Dimensions	105 mm × 105 mm × 12 mm, steel thickness 1,8 mm
Material	galvanized steel
Drywall - unit	
Manufacturer*	Insert unit (consisting of steel stud stubs with connection to ceiling level) prepared and installed by the ift
Dimensions (W x H)	1,230 mm × 1,480 mm
Total thickness	190 mm
Construction	2 × 12.5 mm gypsum board 50 mm CW profile, partial mineral fibre insulation 3 × 40 mm 50 mm CW profile, partial 2 × 12.5 mm gypsum board
Stud framing	2 metal studs made of 50 mm CW profile, decoupled
Cladding	gypsum board, Feuerschutzplatte Knauf Piano GKF 12,5, screw-fastened
Insulation of cavity	mineral fibre insulation 3 × 40 mm
Test variants:	
Variant 1	
(measurement protocol 01)	Drywall unit without electrical box
Variant 2	
(measurement protocol 02)	Drywall unit with 1 electrical box
Position of electrical box	oriented to sending room
Mastic on electrical box	without
Cover for electrical box	without
Variant 3	
(measurement protocol 03)	Drywall unit with 2 electrical boxes
Position of electrical box	oriented to sending room and to receiving room
Mastic on electrical box	without

Cover for electrical box	without
Variant 4	
(measurement protocol 04)	Drywall unit with 1 electrical box
Position of electrical box	oriented to sending room
Mastic on electrical box	with Hilti Firestop Putty Pad CP 617XL 9” × 9”
Cover for electrical box	with cover, not screwed
Variant 5	
(measurement protocol 05)	Drywall unit with 2 electrical boxes
Position of electrical box	oriented to sending room and to receiving room
Mastic on electrical box	Box 1 (to sending room) with Hilti Firestop Putty Pad CP 617XL 9” × 9”, Box 2 (to receiving room) without mastic
Cover for electrical box	with cover, not screwed
Variant 6	
(measurement protocol 06)	Drywall unit with 2 electrical boxes
Position of electrical box	oriented to sending room and to receiving room
Mastic on electrical box	both boxes with Hilti Firestop Putty Pad CP 617XL 9” × 9”
Cover for electrical box	with cover, not screwed

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 with suppressed flanking transmission according to EN ISO 10140-5: 2010+A1:2014; the test rig includes a acoustic break which is sealed in the test opening with closed-cell permanently resilient sealant.
Mounting of test specimen	Test specimen mounted by ift Laboratory for Building Acoustics and employees of the client.
Mounting conditions	Mounting in test opening, sealed on both sides with plastic sealant.
Special features	One electric box was mounted in the drywall unit with orientation to the sending room, another electric box was mounted on the same position with orientation to the receiving room.

1.3 Representation of test specimen

The constructional details were inspected solely on the basis of the characteristics to be classified.

Fig. 1 drywall insert unit with electrical box (from source room / receiving room)

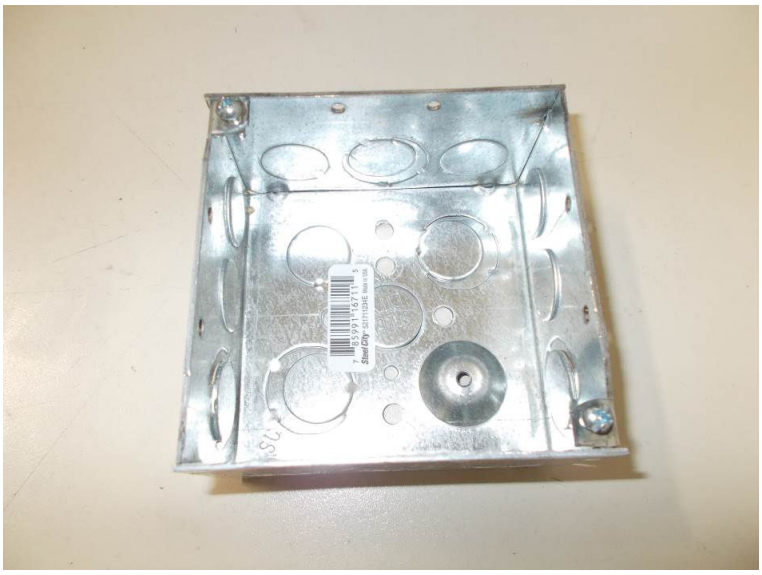


Fig. 2 Variant 2, metal box for electrical installation

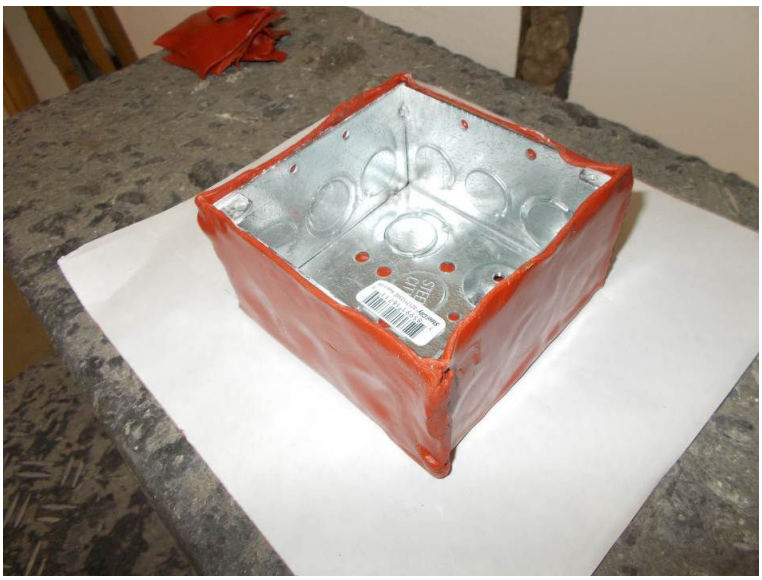


Fig. 3 Variant 4, metal box for electrical installation sealed with HILTI Putty Pad

Fig. 4 Variant 4, metal box for electrical installation sealed with HILTI Putty Pad with metal cover

Test Report 20-001229-PR01 (PB 01-E03-04-en-01) dated 01.10.2020
Client Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, (Germany)

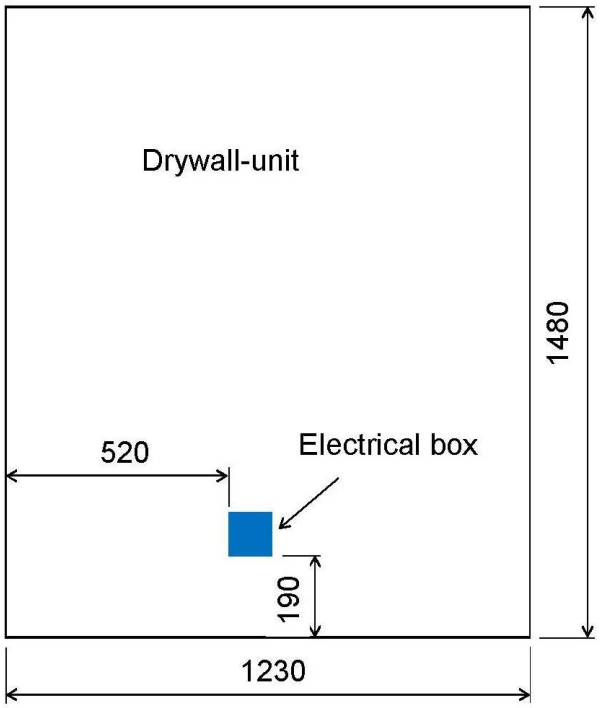


Fig. 5 Variants 2 and 3: Electrical box 1 in drywall-unit (from sending room)

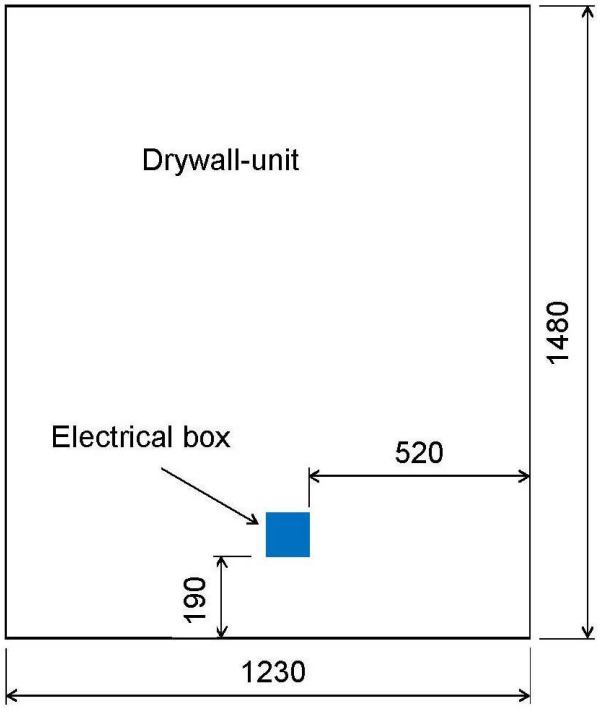


Fig. 6 Variants 3 and 5: Electrical box 2 in drywall-unit (from receiving room)

Test Report 20-001229-PR01 (PB 01-E03-04-en-01) dated 01.10.2020
Client Hilti Entwicklungsgesellschaft mbH, 86916 Kaufering, (Germany)

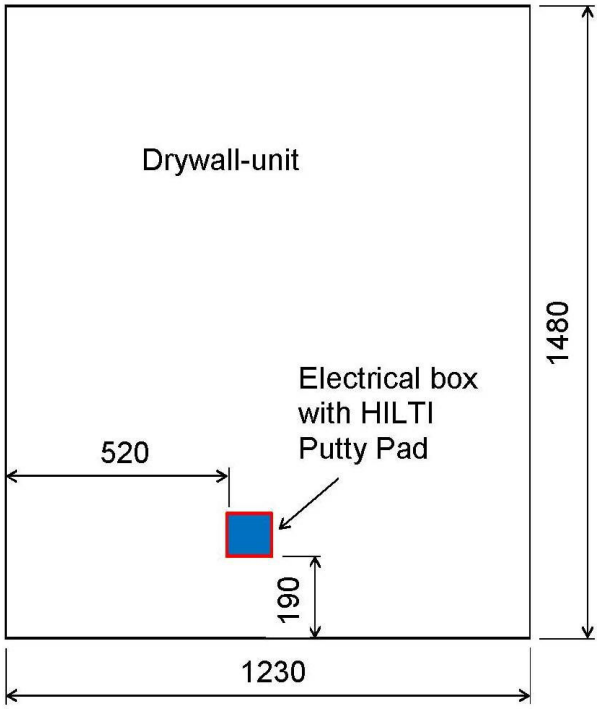


Fig. 7 Variants 4, 5 and 6: Electrical box 1 in drywall-unit (from sending room)

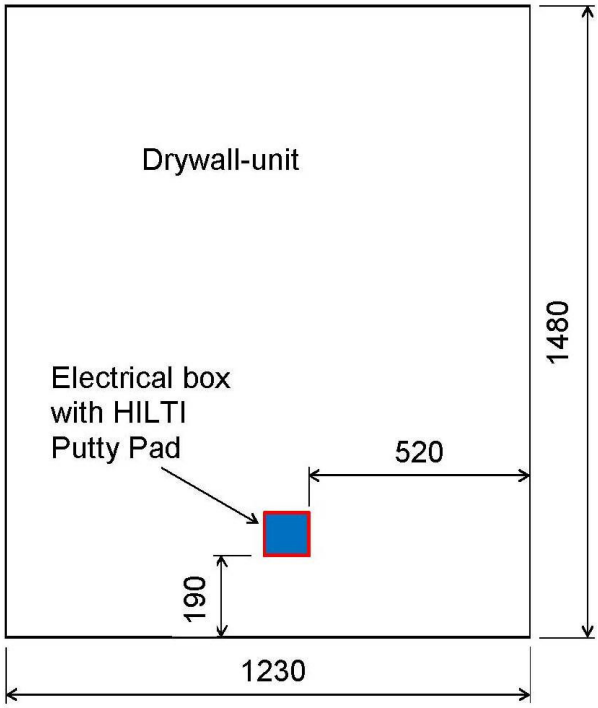


Fig. 8 Variant 6: Electrical box 2 in drywall-unit (from receiving room)

2 Procedure

2.1 Sampling

Selection of test specimen	The test specimen were selected by the client.
Number	1 package with electrical boxes an HILTI Firestop Putty Pads
Manufacturer	Hilti Entwicklungsgesellschaft mbH,
Manufacturing plant	Hilti Werk 4a, 86916 Kaufering (Germany)
Responsible for sampling	Mr. Peter Schulze
Delivery at **ift**	13.07.2020 by the client via forwarding agency
ift registration number	51071

2.2 Methods

Basis

EN ISO 10140-1: 2016	Acoustics; Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products (ISO 10140-1: 2016)
EN ISO 10140-2:2010	Acoustics; Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation (ISO 10140-2:2010)
EN ISO 717-1: 2013	Acoustics; Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation (ISO 717-1:2013)

Corresponds to the national German standard/s:
DIN EN ISO 10140-1: 2016-12, DIN EN ISO 10140-2:2010-12 and
DIN EN ISO 717-1 : 2013-06

Additional basis

ASTM E 90-09	Standard test method for laboratory measurement of airborne sound transmission loss of building partitions and elements
ASTM E 413-10	Classification for rating sound insulation

Boundary conditions	As per standard specifications. 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 10140-4:2010 Clause 4.3.
Maximum sound insulation	The test result for the dry wall unit without penetrations serves as maximum sound insulation for the units with the mounted electrical boxes. In terms of a weighted normalized sound level difference it was evaluated as $D_{n,e,w,max}$ = 72 dB. The difference between sound insulation of the test specimen (electrical boxes) and maximum sound insulation of the test setup is partly smaller 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
A_0	Reference absorption area = 10 m²
L_1	Sound pressure level source room in dB
L_2	Sound pressure level receiving room in dB
R	Sound reduction index in dB
$D_{n,e}$	normalized sound level difference of small building components 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)

2.3 Test equipment

Device	Type	Manufacturer
Integrating sound meter	Type Nortronic 140	Norsonic-Tippkemper
Microphone preamplifiers	Type 1209	Norsonic-Tippkemper
Microphone unit	Type 1225	Norsonic-Tippkemper
Calibrator	Type 1251	Norsonic-Tippkemper
Dodecahedron loudspeakers	Type 229	Norsonic-Tippkemper
Amplifier	Type 335	Norsonic-Tippkemper
Rotating microphone boom	Type 231-N-360	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 April 2019. The sound level meter used, Series No. 1406469 and 1406470, was calibrated by Eichamt Dortmund on 17.03.2020. The specifications of DIN EN ISO/IEC 17025 regarding the measurement traceability are fullfilled by LBME NW (Eichamt Dortmund). The sound level meter used, Series No. 1406469 and 1406470, was DKD calibrated by the company Norsonic Tippkemper (DKD - Deutscher Kalibrierdienst “German Calibration Service”) on 16.03.2020.

2.4 Procedure

Date	14.07.2020
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 413-10, 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	01	Variant 1: Drywall unit without electrical box	72 (-2;-7)		
2	01.1			65 (-2;-7)	65
3	02	Variant 2: with 1 electrical box, oriented to sending room	70 (-2;-7)		
4	02.1			63 (-2;-7)	63
5	03	Variant 3: with 2 electrical boxes, oriented to sending and receiving room	50 (-1;-3)		
6	03.1			43 (-2;-3)	41
7	04	Variant 4: with 1 electrical box, oriented to sending room, with putty pad and cover	71 (-2;-7)		
8	04.1			64 (-2;-7)	64
9	05	Variant 5: with 2 electrical boxes, oriented to sending and receiving room, with cover, box to sending room with putty pad	63 (-2;-4)		
10	05.1			56 (-2;-5)	53
11	06	Variant 6: with 2 electrical boxes, oriented to sending and receiving room, with putty pad and cover	71 (-2;-7)		
12	06.1			64 (-2;-7)	64

4 Instructions for use

4.1 Application for DIN 4109

This test report is not an evidence of suitability for verification of compliance with the requirements given in DIN 4109-1.

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

Basis

EN ISO 12999-1: 2014 Acoustics; Determination and application of measurement uncertainties in building acoustics, part 1: sound insulation (ISO 12999-1: 2014)

The resulting weighted normalized sound level difference of small components (in $^1/_{10}$ dB), determined on the basis of EN ISO 717-1:2013-06 is:

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

Tested variant	protocol No.	$D_{n,e,w}$ in dB
Variant 1	01	72.2
Variant 2	02	70.3
Variant 3	03	50.8
Variant 4	04	71.3
Variant 5	05	63.3
Variant 6	06	71.2

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 12999-1:2014, Table 3 σ_R = 1.2 dB).

4.3 Test standards

Assessment as per ASTM E 413-10 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.

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Laboratory for Building Acoustics
01.10.2020

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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

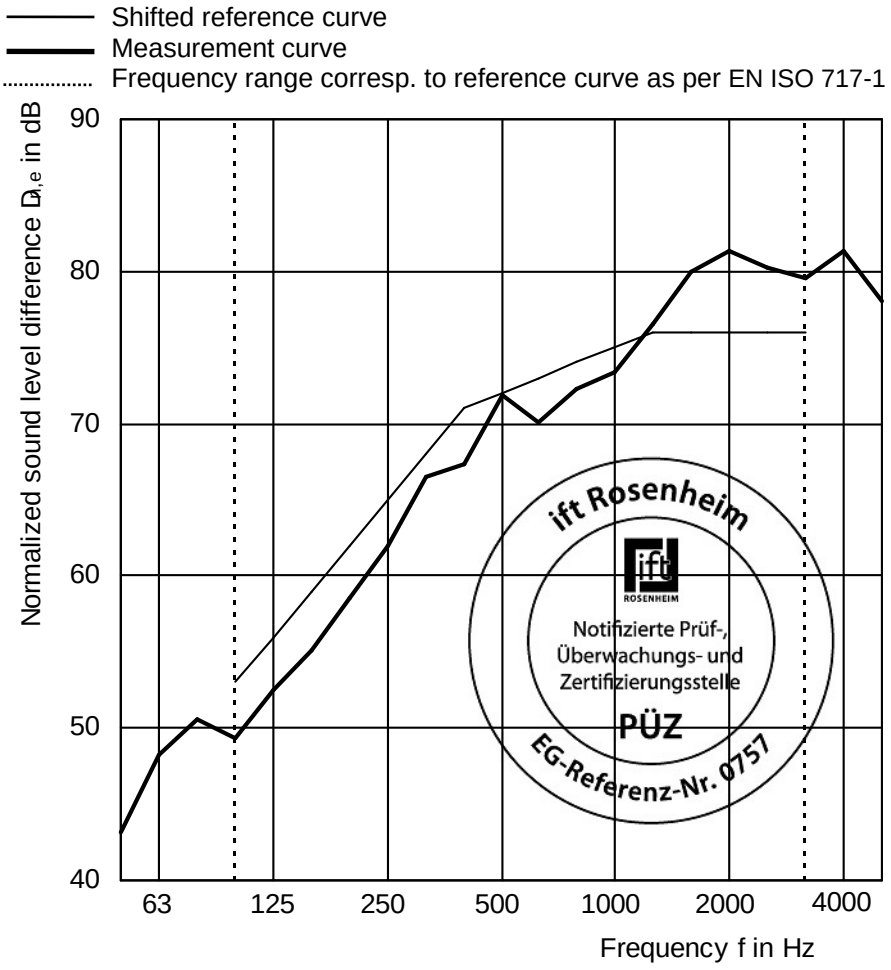
Drywall-unit

Construction 2 × 12.5 mm gypsum board,
50 mm CW profile, partial,
mineral fibre insulation 3 × 40 mm,
50 mm CW profile, partial,
2 × 12.5 mm gypsum board

Variant 1 Drywall unit without electrical box

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without penetrations serves as maximum sound insulation for the units with the mounted electrical boxes.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides.
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	43,2
63	48,2
80	50,6
100	49,4
125	52,5
160	55,1
200	58,6
250	62,0
315	66,5
400	67,4
500	71,8
630	70,1
800	72,3
1,000	73,4
1,250	76,6
1,600	80,0
2,000	81,3
2,500	80,2
3,150	79,5
4,000	81,3
5,000	78,0



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

$D_{n,e,w}$ ($C;C_{tr}$) = 72 (-2;-7) dB $C_{50\text{-}3,150}$ = -3 dB; $C_{100\text{-}5,000}$ = 1 dB; $C_{50\text{-}5,000}$ = -2 dB
$C_{tr,50\text{-}3,150}$ = -10 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -10 dB

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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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

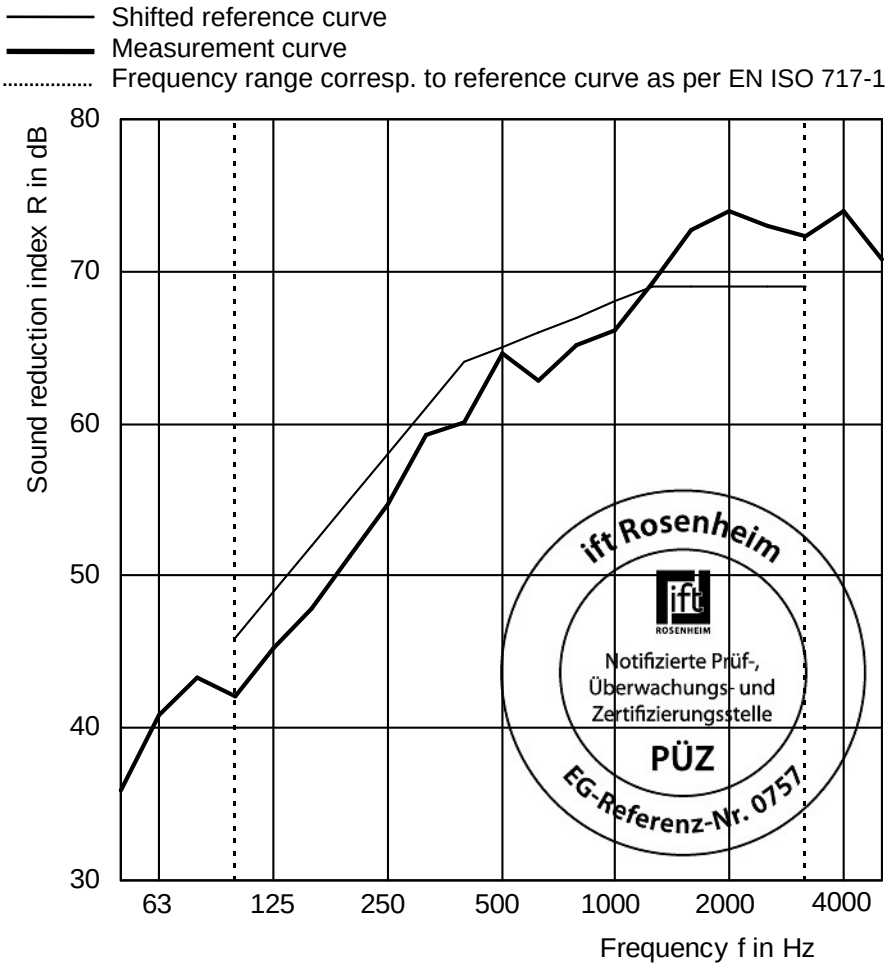
Drywall-unit

Construction 2 × 12.5 mm gypsum board,
50 mm CW profile, partial,
mineral fibre insulation 3 × 40 mm,
50 mm CW profile, partial,
2 × 12.5 mm gypsum board

Variant 1 Drywall unit without electrical box

Test date 14.07.2020
Test surface S = 1.25 m × 1.50 m = 1.88 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
No specification: the test result for the dry wall unit without penetrations serves as maximum sound insulation for the units with the mounted electrical boxes.
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	35,9
63	40,9
80	43,3
100	42,1
125	45,2
160	47,8
200	51,3
250	54,7
315	59,3
400	60,1
500	64,6
630	62,8
800	65,1
1,000	66,1
1,250	69,3
1,600	72,7
2,000	74,0
2,500	73,0
3,150	72,3
4,000	74,0
5,000	70,8



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

R_w ($C;C_{tr}$) = 65 (-2;-7) dB $C_{50\text{-}3,150}$ = -3 dB; $C_{100\text{-}5,000}$ = 1 dB; $C_{50\text{-}5,000}$ = -2 dB
$C_{tr,50\text{-}3,150}$ = -10 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -10 dB

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Data sheet 2, measurement protocol 01.1
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01.10.2020

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

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

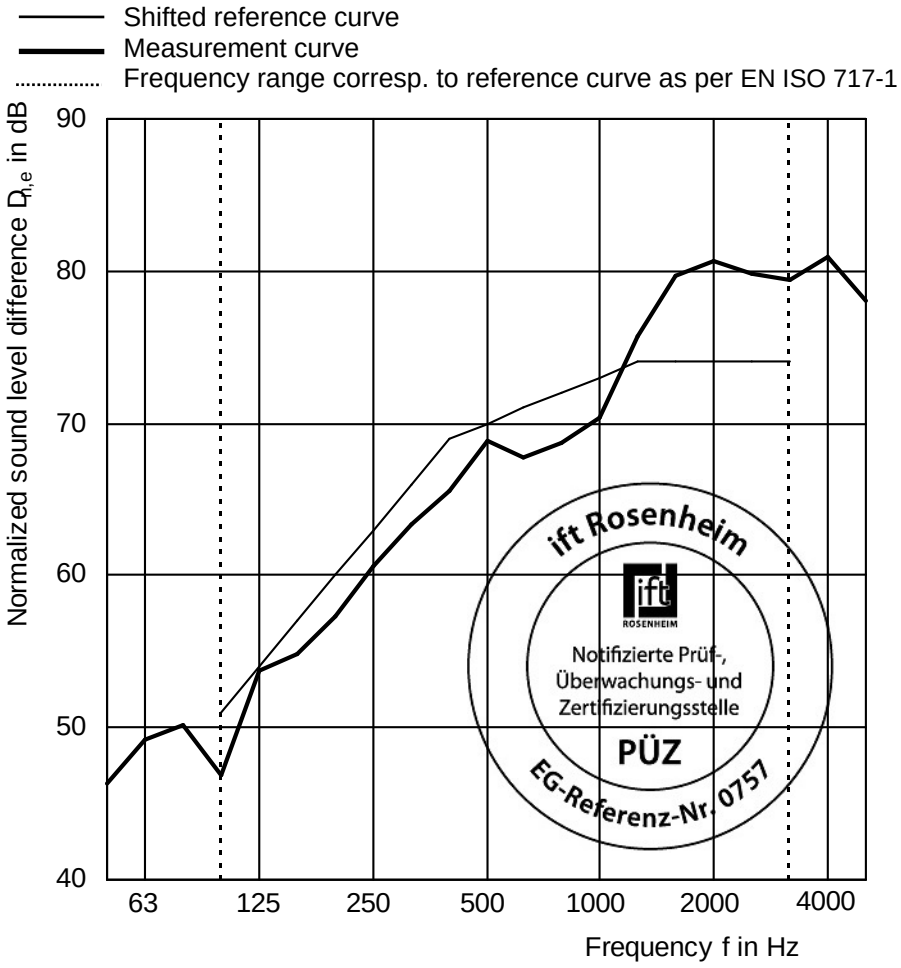
Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 2	Drywall unit with 1 electrical box
Position	electrical box oriented to sending room
Mastic	without
Cover	without

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
$D_{n,e,w,max}$ = 72 dB (related to A_0 = 10 m²)
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	46,3
63	49,2
80	50,2
100	46,9
125	53,8
160	54,9
200	57,3
250	60,6
315	63,4
400	65,6
500	68,9
630	67,7
800	68,7
1,000	70,3
1,250	75,7
1,600	79,7
2,000	80,7
2,500	79,8
3,150	79,4
4,000	81,0
5,000	78,0



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

$D_{n,e,w}$ ($C;C_{tr}$) = 70 (-2;-7) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB
$C_{tr,50\text{-}3,150}$ = -8 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -8 dB

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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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 2	Drywall unit with 1 electrical box
Position	electrical box oriented to sending room
Mastic	without
Cover	without

Test date 14.07.2020

Test surface S = 1.25 m × 1.50 m = 1.88 m²

Partition wall Double-leaf concrete wall

Test noise Pink noise

Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³

Maximum sound insulation
$R_{w,max}$ = 65 dB (related to test surface)

Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame

Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	39,0
63	42,0
80	42,9
100	39,7
125	46,6
160	47,7
200	50,0
250	53,3
315	56,1
400	58,3
500	61,7
630	60,4
800	61,4
1,000	63,1
1,250	68,5
1,600	72,4
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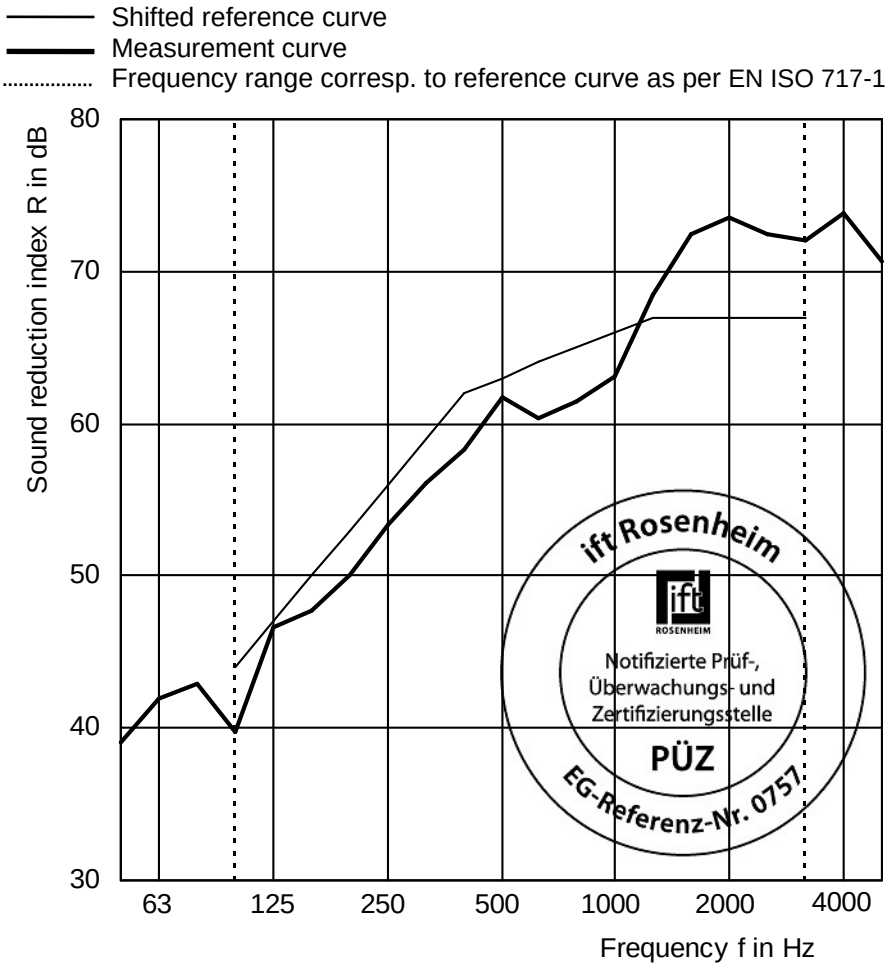
2,500	72,5
3,150	72,1
4,000	73,8
5,000	70,7



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

R_w ($C;C_{tr}$) = 63 (-2;-7) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = 1 dB; $C_{50\text{-}5,000}$ = -1 dB

$C_{tr,50\text{-}3,150}$ = -9 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -9 dB

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

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

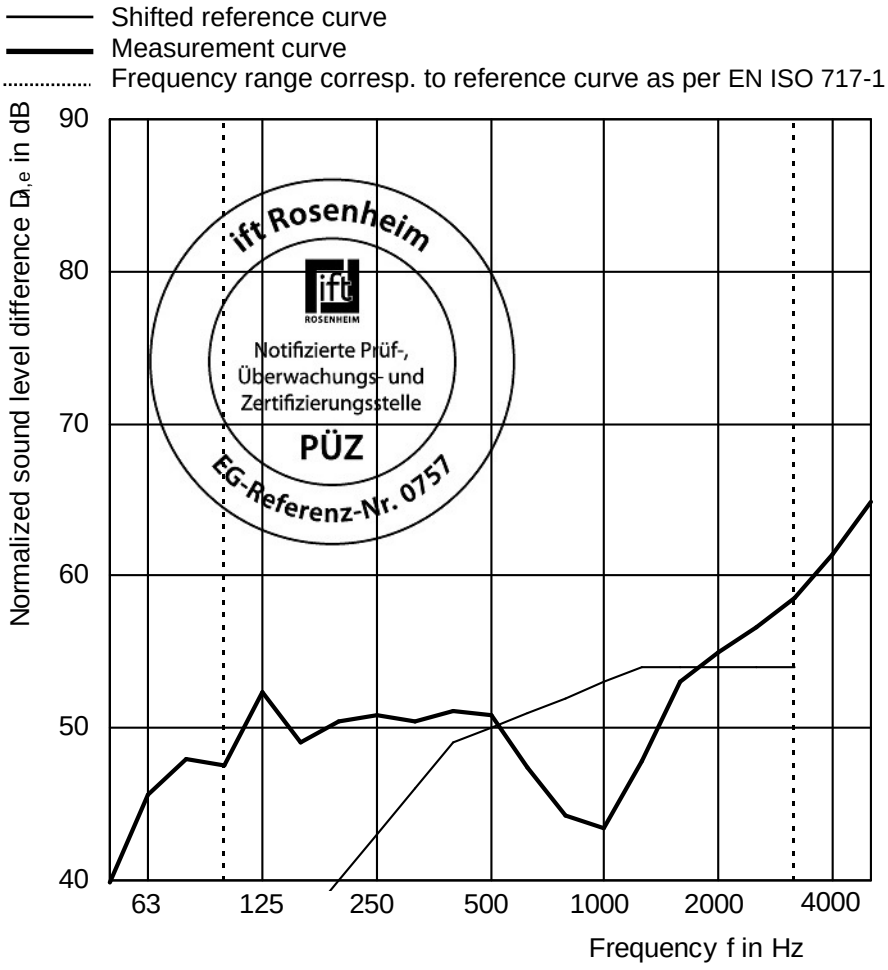
Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 3	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	without
Cover	without

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
$D_{n,e,w,max}$ = 72 dB (related to A_0 = 10 m²)
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	39,9
63	45,6
80	48,0
100	47,6
125	52,4
160	49,0
200	50,5
250	50,8
315	50,4
400	51,1
500	50,8
630	47,4
800	44,3
1,000	43,4
1,250	47,8
1,600	53,1
2,000	55,0
2,500	56,6
3,150	58,5
4,000	61,4
5,000	64,8



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

$D_{n,e,w}$ (C;C_{tr}) = 50 (-1;-3) dB $C_{50\text{-}3,150}$ = -1 dB; $C_{100\text{-}5,000}$ = 0 dB; $C_{50\text{-}5,000}$ = 0 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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01.10.2020

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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 3	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	without
Cover	without

Test date 14.07.2020

Test surface S = 1.25 m × 1.50 m = 1.88 m²

Partition wall Double-leaf concrete wall

Test noise Pink noise

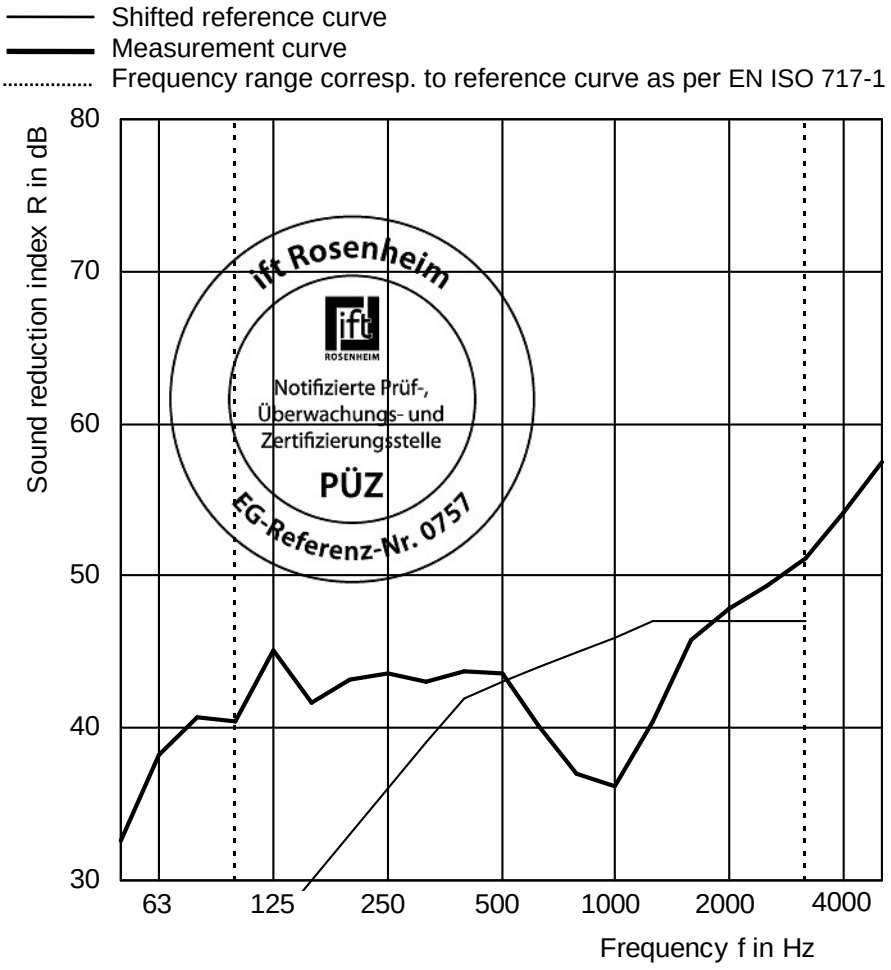
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³

Maximum sound insulation
$R_{w,max}$ = 65 dB (related to test surface)

Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame

Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	32,6
63	38,3
80	40,7
100	40,4
125	45,1
160	41,7
200	43,2
250	43,6
315	43,1
400	43,8
500	43,6
630	40,1
800	37,0
1,000	36,2
1,250	40,5
1,600	45,8
2,000	47,8
2,500	49,3
3,150	51,2
4,000	54,2
5,000	57,5



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

R_w ($C;C_{tr}$) = 43 (-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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Data sheet 6, measurement protocol 03.1
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01.10.2020

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

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

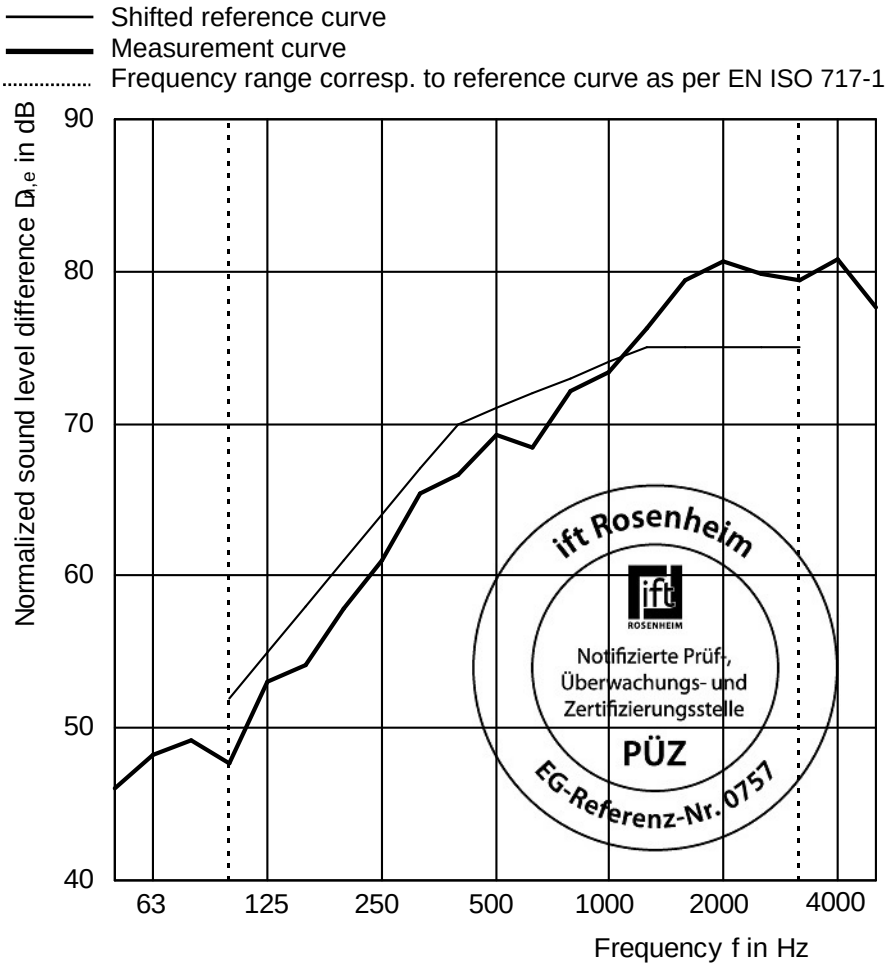
Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 4	Drywall unit with 1 electrical box
Position	electrical box oriented to sending room
Mastic	Hilti Firestop Putty Pad on electrical box
Cover	with cover on electrical box

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
$D_{n,e,w,max}$ = 72 dB (related to A_0 = 10 m²)
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	46,0
63	48,2
80	49,2
100	47,7
125	53,1
160	54,2
200	57,9
250	61,0
315	65,4
400	66,6
500	69,2
630	68,5
800	72,1
1,000	73,4
1,250	76,3
1,600	79,4
2,000	80,7
2,500	79,9
3,150	79,4
4,000	80,8
5,000	77,7



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

$D_{n,e,w}$ ($C;C_{tr}$) = 71 (-2;-7) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB
$C_{tr,50\text{-}3,150}$ = -9 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -9 dB

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ift Rosenheim, Laboratory Building Acoustics
01.10.2020

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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 4	Drywall unit with 1 electrical box
Position	electrical box oriented to sending room
Mastic	Hilti Firestop Putty Pad on electrical box
Cover	with cover on electrical box

Test date 14.07.2020

Test surface S = 1.25 m × 1.50 m = 1.88 m²

Partition wall Double-leaf concrete wall

Test noise Pink noise

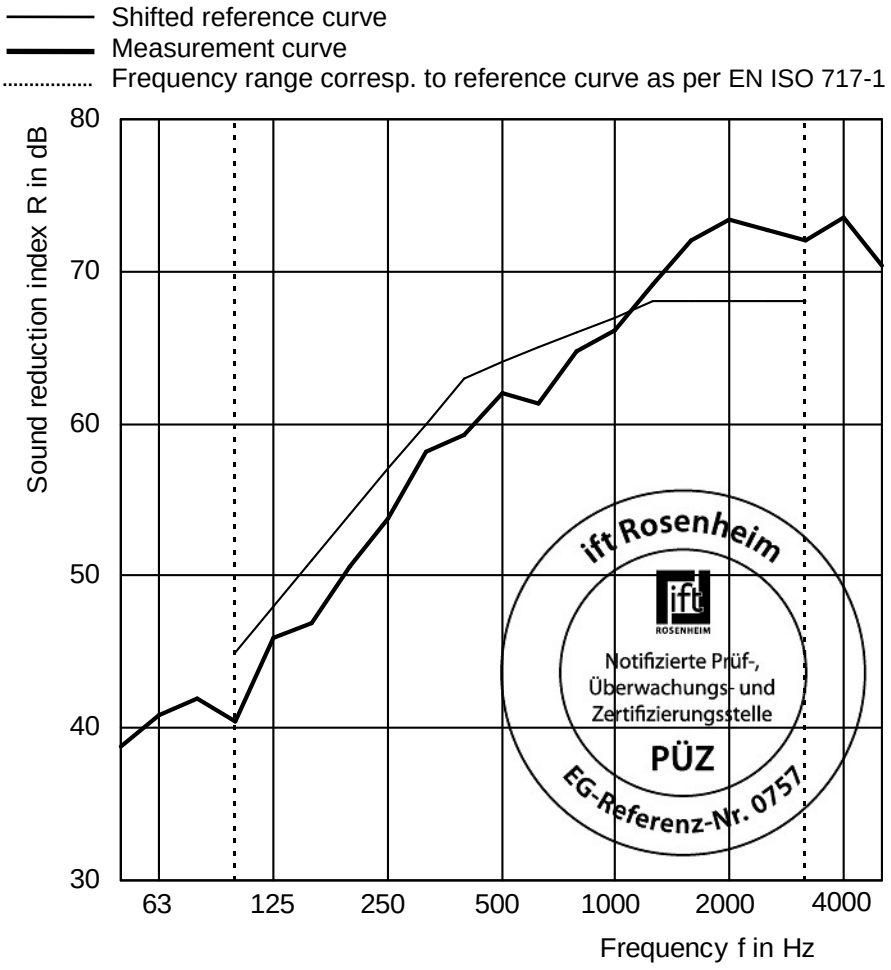
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³

Maximum sound insulation
$R_{w,max}$ = 65 dB (related to test surface)

Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame

Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	38,8
63	40,9
80	42,0
100	40,4
125	45,9
160	46,9
200	50,6
250	53,8
315	58,1
400	59,3
500	62,0
630	61,3
800	64,8
1,000	66,1
1,250	69,1
1,600	72,1
2,000	73,4
2,500	72,7
3,150	72,1
4,000	73,6
5,000	70,4



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

R_w ($C;C_{tr}$) = 64 (-2;-7) dB $C_{50\text{-}3,150}$ = -3 dB; $C_{100\text{-}5,000}$ = 1 dB; $C_{50\text{-}5,000}$ = -2 dB

$C_{tr,50\text{-}3,150}$ = -9 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -9 dB

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01.10.2020

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

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

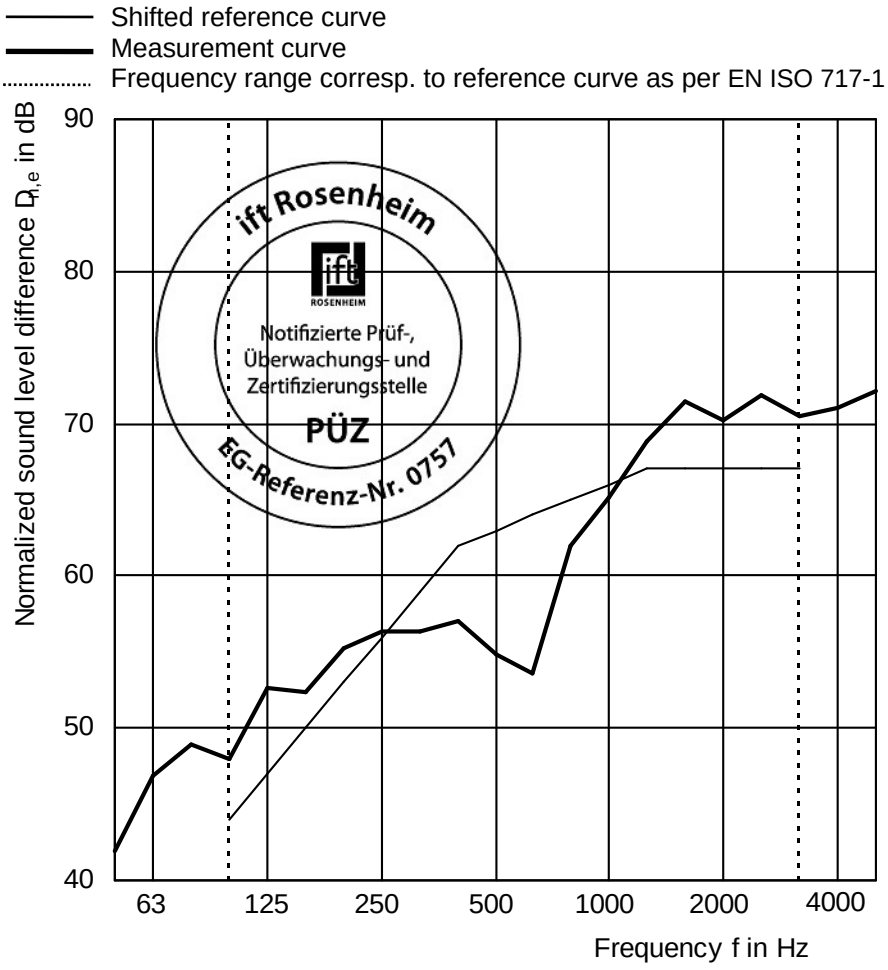
Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 5	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	Hilti Firestop Putty Pad just on one electrical box (oriented to sending room)
Cover	with cover on both electrical boxes

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
$D_{n,e,w,max}$ = 72 dB (related to A_0 = 10 m²)
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	41,9
63	46,9
80	48,9
100	47,9
125	52,6
160	52,4
200	55,2
250	56,3
315	56,4
400	57,0
500	54,9
630	53,6
800	62,0
1,000	65,2
1,250	68,8
1,600	71,4
2,000	70,2
2,500	71,9
3,150	70,5
4,000	71,1
5,000	72,1



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

$D_{n,e,w}$ (C;C_{tr}) = 63 (-2;-4) dB $C_{50-3,150}$ = -2 dB; $C_{100-5,000}$ = -1 dB; $C_{50-5,000}$ = -1 dB
$C_{tr,50-3,150}$ = -5 dB; $C_{tr,100-5,000}$ = -4 dB; $C_{tr,100-5,000}$ = -5 dB

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01.10.2020

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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 5	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	Hilti Firestop Putty Pad just on one electrical box (oriented to sending room)
Cover	with cover on both electrical boxes

Test date 14.07.2020

Test surface S = 1.25 m × 1.50 m = 1.88 m²

Partition wall Double-leaf concrete wall

Test noise Pink noise

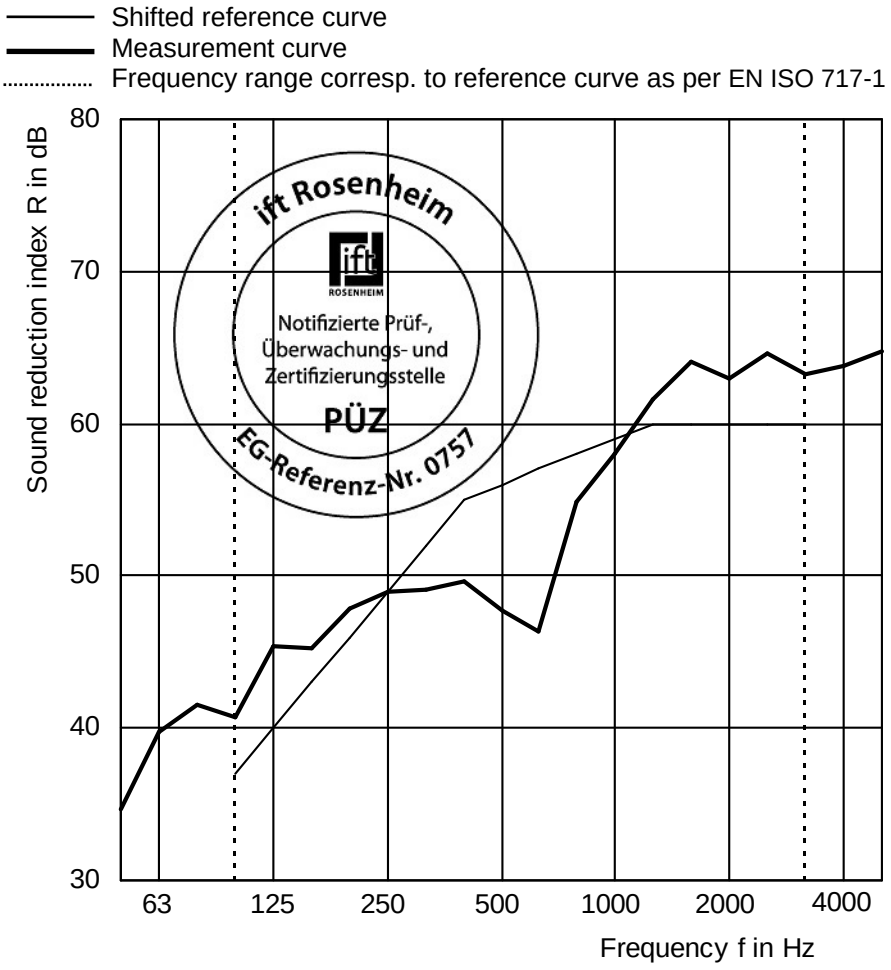
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³

Maximum sound insulation
$R_{w,max}$ = 65 dB (related to test surface)

Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame

Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	34,7
63	39,7
80	41,6
100	40,7
125	45,4
160	45,2
200	47,9
250	49,0
315	49,1
400	49,7
500	47,7
630	46,3
800	54,8
1,000	58,0
1,250	61,6
1,600	64,1
2,000	63,0
2,500	64,6
3,150	63,2
4,000	63,8
5,000	64,8



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

R_w ($C;C_{tr}$) = 56 (-2;-5) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = -1 dB; $C_{50\text{-}5,000}$ = -1 dB

$C_{tr,50\text{-}3,150}$ = -6 dB; $C_{tr,100\text{-}5,000}$ = -5 dB; $C_{tr,100\text{-}5,000}$ = -6 dB

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01.10.2020

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

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

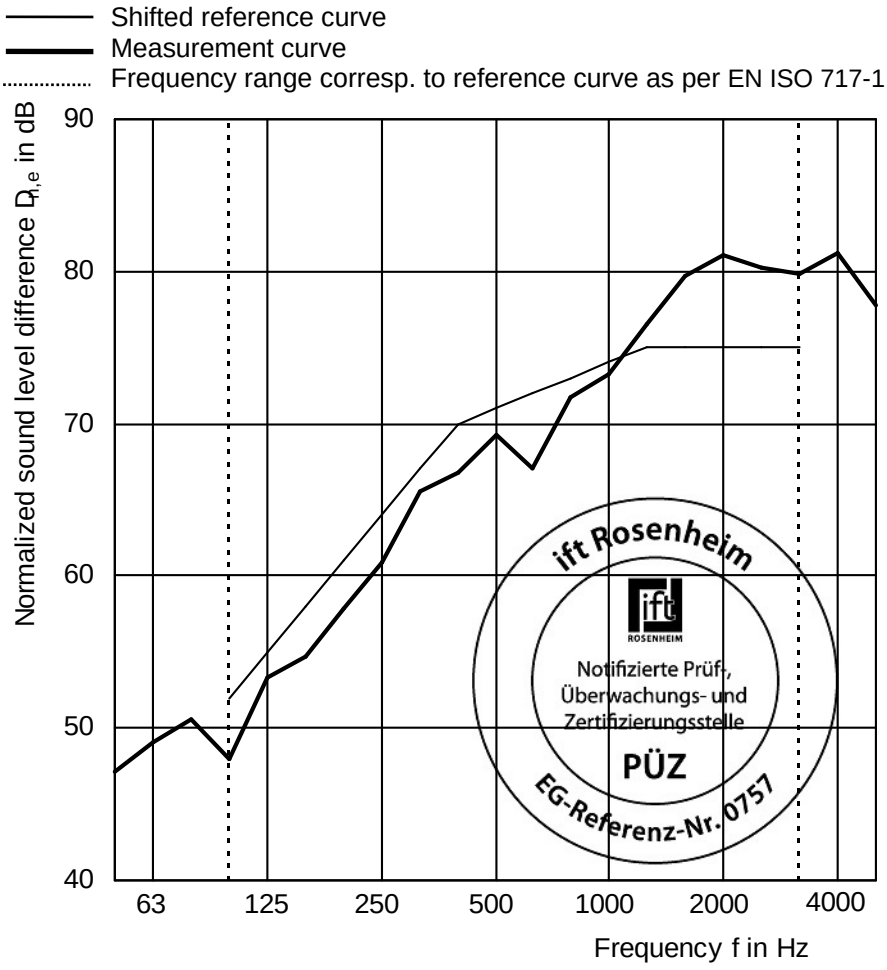
Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 6	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	Hilti Firestop Putty Pad on both electrical boxes
Cover	with cover on both electrical boxes

Test date 14.07.2020
Reference absorption surface A_0 = 10 m²
Partition wall Double-leaf concrete wall
Test noise Pink noise
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³
Maximum sound insulation
$D_{n,e,w,max}$ = 72 dB (related to A_0 = 10 m²)
Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame
Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	$D_{n,e}$ in dB
50	47,1
63	49,0
80	50,6
100	47,9
125	53,3
160	54,7
200	57,8
250	60,9
315	65,6
400	66,8
500	69,3
630	67,0
800	71,7
1,000	73,3
1,250	76,5
1,600	79,7
2,000	81,1
2,500	80,3
3,150	79,8
4,000	81,2
5,000	77,8



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

$D_{n,e,w}$ (C;C_{tr}) = 71 (-2;-7) dB $C_{50-3,150}$ = -2 dB; $C_{100-5,000}$ = -1 dB; $C_{50-5,000}$ = -1 dB
$C_{tr,50-3,150}$ = -9 dB; $C_{tr,100-5,000}$ = -7 dB; $C_{tr,100-5,000}$ = -9 dB

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ift Rosenheim, Laboratory Building Acoustics
01.10.2020

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

Product designation Hilti Firestop Putty Pad CP 617XL 9” × 9”

ROSENHEIM

Drywall-unit

Construction	2 × 12.5 mm gypsum board, 50 mm CW profile, partial, mineral fibre insulation 3 × 40 mm, 50 mm CW profile, partial, 2 × 12.5 mm gypsum board
Variant 6	Drywall unit with 2 electrical boxes
Position	electrical boxes oriented to sending room and to receiving room
Mastic	Hilti Firestop Putty Pad on both electrical boxes
Cover	with cover on both electrical boxes

Test date 14.07.2020

Test surface S = 1.25 m × 1.50 m = 1.88 m²

Partition wall Double-leaf concrete wall

Test noise Pink noise

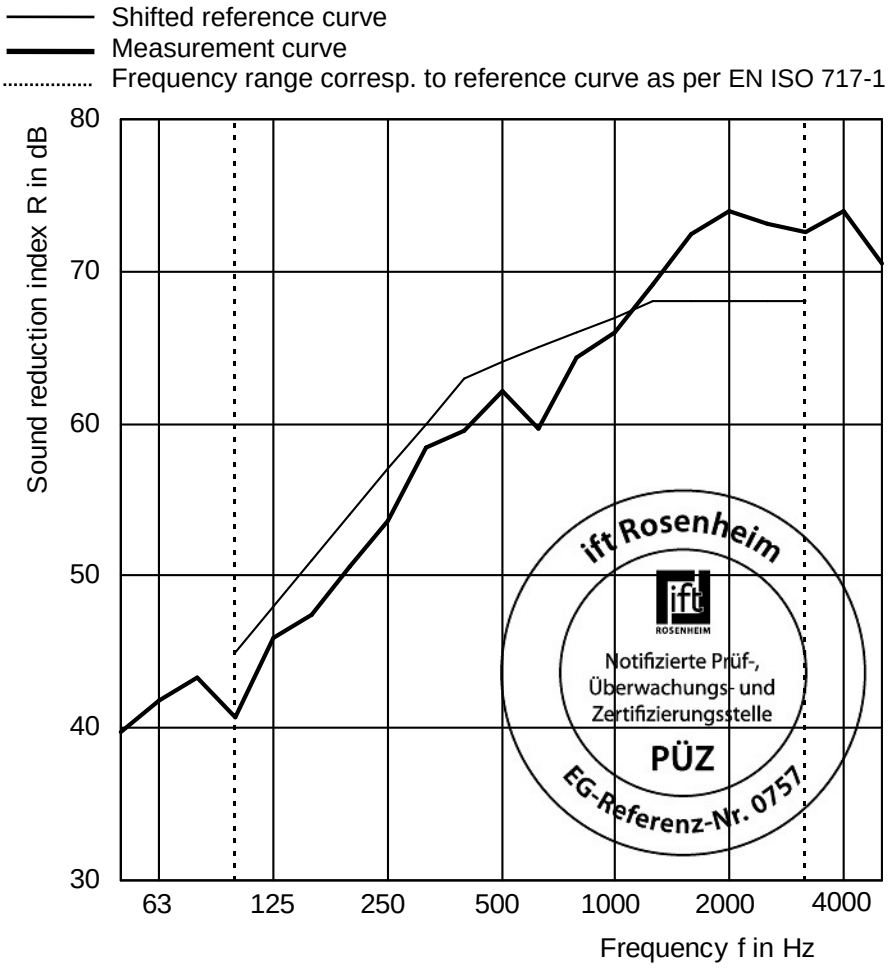
Volumes of test rooms V_S = 109.9 m³, V_R = 101.3 m³

Maximum sound insulation
$R_{w,max}$ = 65 dB (related to test surface)

Mounting conditions
drywall unit mounted in test opening. Connecting joints sealed with plastic sealant on both sides. Electrical boxes screwed to metal frame

Climate of test rooms 22℃ / 50 % rH
Static air pressure 966 hPa

f in Hz	R in dB
50	39,8
63	41,8
80	43,3
100	40,7
125	46,0
160	47,4
200	50,6
250	53,6
315	58,4
400	59,5
500	62,1
630	59,7
800	64,4
1,000	66,0
1,250	69,2
1,600	72,5
2,000	73,9
2,500	73,1
3,150	72,6
4,000	73,9
5,000	70,5



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

R_w ($C;C_{tr}$) = 64 (-2;-7) dB $C_{50\text{-}3,150}$ = -2 dB; $C_{100\text{-}5,000}$ = 1 dB; $C_{50\text{-}5,000}$ = -2 dB

$C_{tr,50\text{-}3,150}$ = -9 dB; $C_{tr,100\text{-}5,000}$ = -7 dB; $C_{tr,100\text{-}5,000}$ = -9 dB

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ift Rosenheim, Laboratory Building Acoustics
01.10.2020

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

ASSESSMENT REPORT

Fire Resistance Performance of
Lift Landing Doorset Related Linear Joint / Penetration Seal Systems

Report No.: R23D18-1A

Issue Date: 26 September, 2023

Date of Review: 25 September, 2026

Report Sponsor

Hilti (Hong Kong) Limited
701-704 & 708B, Tower A Manulife Finance Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, HK

T: +852 2807 0930 F: +852 2662 6105 E: fire@red.com.hk W: www.red.com.hk

CONTENT

REVISION HISTORY

Issue date (DD/MM/YYYY)	Issue number	Remark
25/09/2023	0	Initial version

FIRE RESISTNACE PERFORMANCE OF LIFT LANDING DOORSET RELATED LINEAR JOINT/ PENTRATION SEALING SYSTEMS

1 INTRODUCTION

This assessment report presents an appraisal for the fire resistance performance of lift landing doorset related linear joint / penetration sealing system using the Hilti "CP 636" firestop mortar, "CP617" firestop putty pad and "CFS-COS" firestop composite sheet that was tested under the reference WARRES Nos. 62305/B, 167424, 167427, 167428 and 167429 issued by Warringtonfire and R16L28-1D and R18G14-2A issued by Research Engineering Development Façade Consultants Limited. It is prepared for Hilti (Hong Kong) Limited of 701-704 & 708B, Tower A, Manulife Finance Centre, 223 Wai Yip Street, Kwun Tong, Kowloon, HK.

The proposed sealing systems are required to provide a fire resistance performance of up to 120 minutes integrity performance (and insulation performance for switch box backing application) with respect to BS 476: Part 20: 1987.

2 ASSUMPTIONS

The proposed systems are assumed to be installed in a similar manner to that of the previously tested system by competent installers. It is assumed that the modified systems will be constructed in a similar manner from materials and components of the same manufacture and equivalent quality as tested with supporting test evidence or otherwise appraised by RED. Further assumptions related to the specific modifications will be stated in the report.

It is also assumed that the supporting structures to which the perimeter of the systems will be fixed are capable of supporting the proposed structure effectively.

Assuming that the issue of the original test report is valid, the current testing standard or testing experience has not been changed and the procedures adopted for the original report have been re-examined and reviewed that there have been no changes to the specification of the construction considered in the original report. If contradictory data or any related evidence becomes available to RED, the assessment will be unconditionally withdrawn and the sponsor will be notified. This report is based on the given information, in which is declared by report sponsor that no contradictory data has become available.

3 SUPPORTING DATA

3.1 Summary of Supporting Test Evidence

Report no.	Sections	Description
Primary Test Evidence		
WARRES No. 62305/B	4.1	Supporting test evidence for the use of the Hilti 'CP 636' fire prevention mortar for penetration sealing systems for fire resistance performance up to 240 minutes integrity and 86 minutes insulation.
RED test report no. R16L28-1D	4.1	Supporting test evidence for the use of Hilti "CP617" putty pad for sealing the electrical sockets
RED test report no. R18G14-1A	4.1	Supporting test evidence for the use of Hilti "CFS-COS" Composite sheet for slab aperture sealing.
RED test report no. R18G14-2A	4.1	Supporting test evidence for the use of Hilti "CFS-COS" Composite sheet for wall aperture sealing.
Secondary Test Evidence		
WF No. 164724	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164727	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164728	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.
WF No. 164729	4.1	Supporting test evidence for the use of the Hilti "CP617" putty pad for the sealing of mortise electrical sockets within the drywall system.

3.2 Primary Test Evidence

3.2.1 WARRES Test Report No. 62305/B*

A fire resistance test stated to be in accordance with BS 476: Part 20: 1987 and in conjunction with the EN 1366-3: 1993 of the Hilti "CP 636" fire prevention mortar^ of a 120 mm thick masonry wall at a position where it had been provided with a 600 mm square aperture to allow for its penetration by various electrical services was performed at the Warringtonfire Laboratory on 16th August, 1994. The test sponsor was Hilti AG, who had given permission to use this data.

In this test report, the section of wall contained a 600 mm square centre aperture which was penetrated by one 200 mm wide, one 300 mm wide and one 500 mm wide cable tray, each supporting various electrical cables. The aperture was sealed with a 100 mm thick layer of Hilti "CP 636" fire prevention mortar^. The penetrating services were coated within the thickness of the barrier with a 0.5 mm thickness of Hilti CP 611A mastic.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

Integrity	**240** Minutes
Insulation	**86** Minutes

The test was discontinued after a heating period of 240 minutes (See WARRES no. 62305/B for details).

*Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS 476: Part 20: 1987 and found it suitable for this assessment.

^Note: The Hilti "CP636" fire prevention mortar is renamed as Hilti "CP636" Firestop Mortar as declared in the report.

3.2.2 *RED Test Report No. R16L28-1D**

A fire resistance test in accordance with BS 476: Part 20: 1987 on two specimens of steel boxed protected by Hilti 'CP 617' firestop putty pad was performed at the RED Laboratory on 20th January, 2017. The test sponsor was Hilti (Hong Kong) Limited. As requested by the test sponsor, the specimens were mounted within concrete line specimen holder. The specimens referenced '4' and '5' were asymmetrical and the fire side of specimen was determined by the test sponsor.

Specimen '4' was comprised of a steel box with sizes of 1,050 mm wide by 300 mm high by 100 mm deep by nominal 1 mm thick protected by a layer of nominal 3 mm thick 'CP617' firestop patty pad at the exposed side.

Specimen '5' was comprised of a steel box with sizes of 200 mm wide by 800 mm high by 100 mm deep by nominal 1 mm thick protected by a layer of nominal 3 mm thick 'CP617' firestop patty pad at the exposed side.

The gaps between the concrete wall and specimen '4' were filled with mineral wool with density of 100kg/m³ and 'Hilti CP606' firestop sealant, while the gaps between the concrete wall and specimen '5' were filled with 'Hilti CP606' firestop sealant.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	Insulation
Specimen '4'	**121** Minutes (No failure)	N/A
Specimen '5'	**121** Minutes (No failure)	**79** Minutes

The test was discontinued after a heating period of 121 minutes (See RED test report no. R16L28-1D for details).

*Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS 476: Part 20: 1987 and found it suitable for this assessment.

3.2.3 *RED Test Report No. R18G14-1A**

A fire resistance test in accordance with BS 476: Part 20: 1987 on a total of four specimens of firestop composite sheets, namely specimens 'A', 'B', 'C' and 'D' was conducted at the Research Engineering Development Façade Consultants Limited (RED) Laboratory on 18 July 2018. The test sponsor was Hilti (Hong Kong) Limited.

As requested by the test sponsor, the specimens were mounted within concrete line specimen holder. The specimens were asymmetrical and only one side of specimens was tested, in which the fire side was determined by the test sponsor.

Specimen 'A' was comprised of Firestop Composite Sheets and Rockwool. The overall sizes of the Firestop Composite Sheets were 1,300 mm long by 1,100 mm wide by 3.8 mm thick. The Firestop Composite Sheets were joined together with M5 by 30 mm long screws at 300 mm nominal centres and fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The Rockwool was installed at the bottom of Firestop Composite Sheets and had the thickness of 50 mm and density of 160 kg/m^3. The Rockwool was supported by C-channel with sizes of 50 mm wide by 125 mm high by 1 mm thick at one side and L-angles with sizes of 50 mm by 50 mm by 3 mm thick at three sides. Both the channel and L-angles were fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The separation distance between the Firestop Composite Sheets and Rockwool was 70 mm.

Specimen 'B' was comprised of 2 layers of Firestop Composite Sheets and Rockwool. The overall sizes of the first layer of Firestop Composite Sheets were 1,300 mm long by 1,100 mm wide by 3.8 mm thick. The first layer of Firestop Composite Sheets were joined together with M5 by 30 mm long screws at 300 mm nominal centres and fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The Rockwool was installed at the bottom of first layer of Firestop Composite Sheets and had the thickness of 50 mm and density of 160 kg/m^3. The second layer of Firestop Composite Sheets with the same construction as the first layer was placed at the bottom of the Rockwool. The Rockwool and second layer of Firestop Composite Sheets were supported by C-channel with sizes of 50 mm wide by 125 mm high by 1 mm thick at one side and L-angles with sizes of 50 mm by 50 mm by 3 mm thick at three sides. Both the C-channel and L-angles were fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The separation distance between the first layer of Firestop Composite Sheets and Rockwool was 100 mm.

*Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS 476: Part 20: 1987 and found it suitable for this assessment.

Specimen 'C' was comprised of Firestop Composite Sheets. The overall sizes of the Firestop Composite Sheets were 1,750 mm long by 1,100 mm wide by 3.8 mm thick. The Firestop Composite Sheets were joined together with M5 by 30 mm long screws at 300 mm nominal centres and fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The Firestop Composite Sheets were supported by L-angle with sizes of 50 mm by 50 mm by 3 mm thick which was fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres at one side.

Specimen 'D' was comprised of Firestop Composite Sheets. The overall sizes of the Firestop Composite Sheets were 1,600 mm long by 1,100 mm wide by 3.8 mm thick. An opening with sizes of 300 mm diameter by 200 mm deep by 0.7 mm thick was created at the surface of Firestop Composite Sheets. The Firestop Composite Sheets were joined together with M5 by 30 mm long screws at 300 mm nominal centres and fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres. The Firestop Composite Sheets were supported by L-angle with sizes of 50 mm by 50 mm by 3 mm thick which was fixed to the concrete with M6 by 45 mm long anchor bolts at 300 mm nominal centres at one side. The Rockwool with thickness of 50 mm and density of 160 kg/m^3 was used to cover the opening.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	Insulation
Specimen 'A'	**219** Minutes	**36** Minutes
Specimen 'B'	**288** Minutes (No failure)	**69** Minutes
Specimen 'C'	**199** Minutes	N/A
Specimen 'D'	**209** Minutes	N/A

The test was discontinued after a heating period of 288 minutes (See R18G14-1A for full details).

3.2.4 *RED Test Report No. R18G14-2A**

A fire resistance test in accordance with BS 476: Part 20: 1987 on nine specimens of penetration sealing systems was performed at the RED Laboratory on 28th September, 2018. The test sponsor was Hilti (Hong Kong) Limited. As requested by the test sponsor, the specimens were mounted within concrete line specimen holder. The specimens were asymmetrical and only one side of specimens was tested, in which the fire side was determined by the test sponsor. Only specimen nos.: "12" to"15" are considered in this report.

Specimen '12' was comprised of Firestop Composite Sheets. The overall and exposed sizes of the Firestop Composite Sheets were 910 mm wide by 910 mm high by 3.8 mm thick. The Firestop Composite Sheets were joined together with M5 by 25 mm long screws at 250 mm nominal centres and fixed to L-angles with sizes of 50 mm by 50 mm by 5 mm thick at four sides. The L-angles was fixed the concrete with M6 by 54 mm long anchor bolts at 250 mm nominal centres. Stainless steel facing was faced at exposed side.

Specimen '13' had overall dimensions 910 mm wide by 1,200 mm high by 3.8 mm thick with exposed area 810 mm wide by 1,100 mm high. It was comprised of Firestop Composite Sheets and a G.I. squared pipe. The G.I. squared pipe with sizes of 250 mm wide by 250 mm high by 1 mm thick was penetrated in the centre of specimen. The Firestop Composite Sheets were joined together with M5 by 25 mm long screws at 250 mm nominal centres and fixed to the concrete with M6 by 54 mm long anchor bolts at 250 mm nominal centres. Stainless steel facing was faced at unexposed side.

Specimen '14' had overall dimensions of 1,010 mm wide by 910 mm high by 3.8 mm thick with clear opening area 900 mm wide by 810 mm high. It was comprised of two layers of Firestop Composite Sheets and a G.I. pipe. The G.I. pipe with sizes of 500 mm wide by 200 mm high by 1 mm thick was penetrated in the centre of specimen. The Firestop Composite Sheets were joined together with M5 by 25 mm long screws at 250 mm nominal centres and fixed to the concrete with M6 by 54 mm long anchor bolts at 250 mm nominal centres. Stainless steel facing was faced at both.

Specimen '15' had overall dimensions of 600 mm wide by 300 mm high by 81 mm thick. It was comprised of two nos. of socket boxes with 'Hilti CP617' firestop putty pad incorporated with 75 mm thick 'Ytong' lightweight block wall with nominal 3 mm thick plaster on both sides. Each socket box with cover with sizes of 70 mm by 70 mm by 50 mm deep by 3.5 mm thick was incorporated in each side of block wall. 'Hilti CP617' firestop putty pad was placed inside the socket boxes.

*Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS 476: Part 20: 1987 and found it suitable for this assessment.

All penetrated pipes were supported by fixed to 40 mm by 20 mm by 3 mm thick steel L-angles, located at 100 mm from the concrete wall on both sides. The steel angles were supported by 2 nos. of M10 steel rods to the concrete lining. The opening was covered by nominal 40 mm thick rockwool with density 160 kg/m^3.

The specimens satisfied the performance requirements specified in BS 476: Part 20: 1987 for the following periods:

	Integrity	Insulation
Specimen '12'	**242** Minutes (No failure)	**8** Minutes
Specimen '13'	**242** Minutes (No failure)	**6** Minutes
Specimen '14'	**242** Minutes (No failure)	**27** Minutes
Specimen '15'	**242** Minutes (No failure)	**242** Minutes

The test was discontinued after a heating period of 242 minutes (See Report R18G14-2A for full details).

3.3 Secondary Test Evidence

3.3.1 WF Test Report No. 167424^

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated the self-adhesive putty pad moulded over the face of each back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm.

Specimen 'B' incorporated the self-adhesive putty pad moulded internally within each back box.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 109 °C after 120 minutes.

The test was discontinued after a heating period of 184 minutes (See WF report no. 167424 for full details).

3.3.2 WF Test Report No. 167427^

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated the self-adhesive putty pad moulded over the face of each back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm.

Specimen 'B' incorporated the self-adhesive putty pad moulded internally within each back box.

^Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS EN 1363-1 and found it suitable for this assessment.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 111 °C after 120 minutes.

The test was discontinued after a heating period of 164 minutes (See WF report no. 167427 for full details).

*3.3.3 WF Test Report No. 167428^*

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'exposed' face. In addition Specimen 'A' incorporated a self-adhesive putty pad moulded internally within the back box on the 'unexposed' face of the drywall.

Specimen 'B' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'unexposed' face. In addition Specimen 'B' incorporated a self-adhesive putty pad moulded internally within the back box on the 'exposed' face of the drywall.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 92 °C after 120 minutes.

The test was discontinued after a heating period of 149 minutes (See WF report no. 167428 for full details).

^Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS EN 1363-1 and found it suitable for this assessment.

3.3.4 *WF Test Report No. 167429^*

An indicative fire resistance test stated to be utilizing the general heating condition and principle of BS EN 1363-1: 1999 on the electrical socket protected by the use of the Hilti "CP 617" putty pad incorporated within the drywall partition was performed at the Warringtonfire Laboratory on 24th September, 2007. The test sponsor was Hilti (Great Britain) Ltd., who had given permission to use this data. As stated in the report, the test was not conducted under the requirements of UKAS accreditation. However, the report is still accepted to be used as the secondary test evidence for the application of the Hilti CP617 putty pad.

In this test report, two apertures were cut through each face of a drywall assembly composed of plasterboards. The electrical sockets were position back to back with each other. An electrical socket complete with its rear plastic box and a connected 3-core electrical wire tail was installed into each aperture. The overall size of the back box was 132 mm x 73 mm x 36 mm deep with a cover plate size of 145 mm x 85 mm. The back boxes were fixed to the plasterboards with two steel screws.

Specimen 'A' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'exposed' face. In addition, Specimen 'A' incorporated a self-adhesive putty pad moulded internally within the back box on the 'unexposed' face of the drywall.

Specimen 'B' incorporated a self-adhesive putty pad moulded over the face of the back box within the drywall cavity and onto the adjacent plasterboard over a distance of approximately 15 mm to the socket on 'unexposed' face. In addition, Specimen 'B' incorporated a self-adhesive putty pad moulded internally within the back box on the 'exposed' face of the drywall.

Thermocouples attached to and around the sockets recorded a maximum temperature rise of 99 °C after 120 minutes.

The test was discontinued after a heating period of 149 minutes (See WF report no. 167429 for full details).

^Note: The test data is more than five years old; we have reviewed this data against the current test procedures as per BS EN 1363-1 and found it suitable for this assessment.

4 PROPOSAL & DISCUSSION

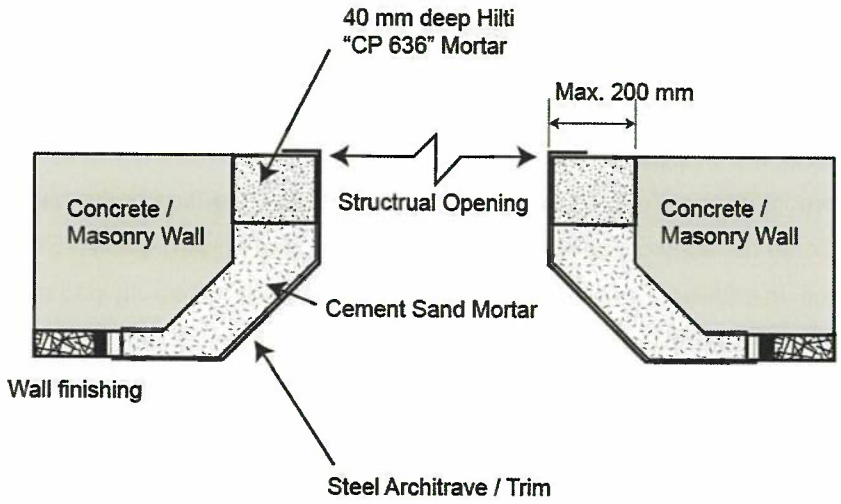
4.1 Fire Resistance Performance of Hilti CP 636 Firestop Mortar for 120 Minutes Integrity Only in Accordance with BS 476: Part 20/22: 1987

Proposal

It is proposed that previously fire tested lift landing doorsets with appropriate fire test evidence may be installed within a masonry/concrete construction with the use of Hilti "CP636" firestop mortar to adjust the structural opening sizes. The lift landing doorsets will be fixed to the supporting construction via the door trim/architrave in a similar means to that originally tested. The maximum allowable distance from the supporting construction to the door steel architrave/trim of 200 mm.

The illustration below indicates the proposed installation details of the Hilti CP 636:

Figure 1: Illustration of the installation details of Hilti "CP636" firestop mortar for lift-landing door opening



The Hilti "CP636" firestop mortar for use of lift-landing opening shall be capable to maintain the integrity performance for up to 120 minutes integrity performance when subjected to a test in accordance with BS 476: Part 20/22: 1987.

Discussion

The test evidence WARRES no. 62305/B described the test of the use of Hilti CP636 for the sealing of the aperture within the concrete wall that allows the penetration of various electrical service items. The specimen was a 600 mm by 600 mm aperture with the present of three cable trays. The Hilti "CP 636" firestop mortar was used to seal up the void in between the cable trays within the aperture. The thickness of the mortar was 100 mm thick. The system had achieved the fire resistance performance of 240 minutes integrity and 86 minutes insulation.

Actually, for the proposed design, the Hilti "CP 636" firestop mortar is used to filing the void in between the lift landing doorset architrave / trim while maintaining the fire resistance performance of the extension

from the wall. The tested specimen in WARRES 62305/B included a layer of 100 mm thick Hilti "CP636" firestop mortar which was directly exposed to fire.

In the proposal, the minimum 40 mm thick Hilti "CP 636" firestop mortar and backed with the sand/cement mortar to the full depth of the architrave/trim. Since both the Hilti "CP636" and the send/cement mortar infill are both non-combustible in nature, coupled with the retention afforded via the steel architrave/trim that ensure the mortar remain intact in position, this gives confidence in the ability for the proposed details to provide the fire resistance performance of 120 minutes integrity.

The maximum unsupported area of the seal in the test was approximately 250-300 mm high by 600 mm wide. This demonstrated the ability and resistance to collapse of the seal without support for the 240 minute test duration. Therefore, the proposal of the width up to 200 mm wide is considered as reasonable with the support of the available test evidence.

The tested seal had achieved the fire resistance performance of 240 minutes integrity which was equivalent to 100% performance overrun compared to the required fire resistance performance of 120 minutes integrity performance as proposed. This provides confidence buffer for the proposal as well.

4.2 *Fire Resistance Performance of Hilti CP 636 Firestop Mortar for 120 Minutes Integrity and Insulation in Accordance with BS 476: Part 20/22: 1987*

Proposal

It is proposed that the Hilti 'CP 636' firestop mortar and the 'CP 617' firestop putty pad for the switch control box may be used to seal up the switch control penetration for lift land doorset under the following conditions:

(a) For swich control box with maximum dimensions of up to 150 mm wide by 250 mm high by 150 mm deep incorporated within a minimum 250 mm thick concrete supporting construction, the back of the switch box fully filled with minimum 100 mm thick Hilti 'CP636' firestop mortar. The sealing provision shall be capable to maintain 120 minutes integrity and insulation performance with respect to BS 476: Part 20/22: 1987;

(b) For switch control box with maximum dimensions up to 300 mm wide by 600 mm high by 150 mm deep incorporated within a minimum 250 mm thick concrete supporting construction, one layer of 3 mm thick Hilti 'CP 617' fire stop putty pad shall be fitted either inside or outside of switch box and the back of the switch box may be fully filled with minimum 100 mm thick Hilti 'CP 636' firestop mortar. This sealing provision shall be capable to maintain 120 minutes integrity and insulation performance with respect to BS 476-20/22: 1987;

(c) For switch control box with the height exceeds the case in (a) and up to 1,050 mm high, the same requirement of the Hilti 'CP 617' and 'CP 636' shall be applied, but this sealing provision only capable to maintain 120 minutes integrity and 60 minutes insulation performance with respect to BS 476-20/22: 1987; or

(d) For switch control box maximum dimensions up to 200 mm wide by 1,050 mm high by 150 mm deep and make up 1 mm thick steel sheet, one layer of 3 mm thick Hilti 'CP 617' putty pad shall be applied on the heat exposure side. This sealing provision shall be capable to maintain 120 minutes integrity and 60 minutes insulation performance with respect to BS 476-20/22: 1987.

Table 4.2.1: The application of the firestop sealant

Switch control box sizes	Min. wall thickness	FS System	FRR
150 mm (w) x 250 mm (h) x 150 mm (d)	250 mm	100 mm CP 636	--/120/120
300 mm (w) x 600 mm (h) x 150 mm (d)	250 mm	100 mm CP636 + 3 mm CP617 putty pad	--/120/120
300 mm (w) x 1,050 mm (h) x 150 mm (d)	250 mm	100 mm CP636 + 3 mm CP617 putty pad	--/120/60
200 mm (w) x 1,050 mm (h) x 150 mm (d)	250 mm	3 mm thick CP 617 putty pad on the socket box at the heat exposure side	--/120/60

The illustration below indicates the proposed installation details for the switch box.

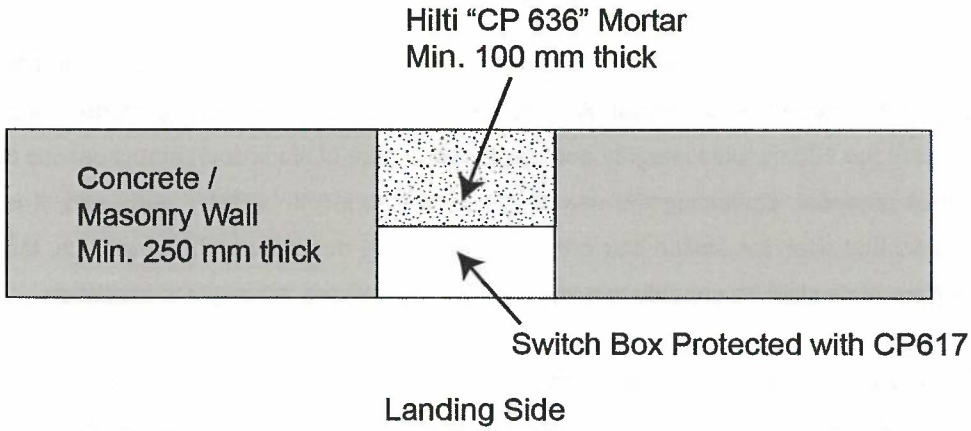


Figure 2: Illustration of the installation details of Hilti "CP636" firestop mortar for installation of switch box

Discussion

The test evidence WARRES no. 62305/B was used to support the usage of the Hilti "CP636" Firestop mortar for the usage of switch box backing. In the test evidence WARRES no. 62305/B, the tested system was the use of the Hilti 'CP636' firestop mortar to seal up a 600 mm x 600 mm concrete wall aperture with the service penetration through. The system had achieved the fire resistance performance of 240 minutes integrity and 86 minutes insulation. From the test observation and the recorded temperature, the failure in insulation is due to the maximum temperature rise measured on the penetration device exceed 180 °C. While for the rest of the area within this aperture that sealed up by the Hilti 'CP636' firestop mortar only, the achieved insulation performance was significantly in excess of the required 120 minutes.

(a) For the proposal applies to the switch box with maximum sizes of 150 mm wide by 250 mm high by 150 mm deep within a minimum 250 mm thick concrete / masonry wall adjacent to the lift landing doorset. The minimum 100 mm thick Hilti "CP 636" with the area of 150 mm by 250 mm is smaller than the maximum unsupported area in the test as stated above. Therefore, this proposal is considered as supported by the available test evidence with reasonable modification.

(b) While for the proposal that applied to larger switch box sizes up to 300 mm wide by 600 mm high by 150 mm deep within the same supporting construction, the supporting test evidence R16L28-1D is considered as the another supporting evidence for this proposed scope of application. In the test evidence R16L28-1D described the test of two specimens which were the 200 mm deep concrete aperture filled with steel box backed with one layer of 3 mm thick putty pad on the exposed side. Specimen 4 was a steel box with sizes of 1,050 mm wide x 300 mm high x 100 mm deep x 1 mm thick and specimen 5 was a steel box with sizes of 200 mm wide x 800 mm high x 100 mm deep x 1 mm thick. In specimen 4, the clearance gap between the steel box and the concrete wall was filled

with 50 mm deep mineral wool and 10 mm deep CP 606 firestop sealant. In specimen 5, the clearance gap between the steel box and the concrete wall was sealed up with 10 mm deep CP606 firestop sealant. In this proposal, the switch box within the aperture is backed with additional 100 mm thick Hilti CP636 firestop mortar. As discussed in (a), the CP636 firestop mortar have the potential to provide the 120 minutes integrity and insulation in case of blank seal without service penetration, and it this proposal, combining the use of the 3 mm thick Hilti "CP617" putty pad, it is reasonable to expect that even the switch box with sizes up to 300 mm wide by 600 mm high, the fire resistance performance shall be capable to provide up to 120 minutes integrity and insulation.

(c) For the switch box sizes exceed 600 mm high, up to 1,050 mm high and with the steel box backed with 3 mm thick Hilti 'CP617', the system to provide 120 minutes integrity and 60 minutes insulation is considered as basically direct applied the result as referenced from R16L28-1D.

(d) For the switch box sizes with sizes of 200 mm wide x 1,050 mm high and 150 mm deep and the swich box shall be composed of minimum 1 mm thick steel sheet. The switch box may be fitted with a layer of 3 mm thick Hilti 'CP617' putty pad on either side of the switch box, provided that the putty pad is apply to the heat exposure side. This proposed scope is again considered as directly adopted the tested system as described in R16L28-1D.

4.3 *Fire Resistance Performance of Hilti CFS-COS Composite Sheet for 180 or 240 Minutes Integrity in Accordance with BS 476: Part 20/22: 1987*

Proposal

It is proposed that the Hilti "CFS-COS" composite sheet which was tested in R18G14-1A, R18G14-2A and appraised in R18M03-1A may be used to seal up the aperture fitted with lift control cabinet:

(a) Maximum aperture sizes up to 2,630 mm high by 1,770 mm wide fitted with one (1) layer of Hilti CFS-COS composite sheet at the back of the control cabinet to satisfy 180 minutes integrity performance; or
(b) Maximum aperture sizes up to 1,200 mm high by 910 mm wide fitted with one (1) layer of Hilti CFS-COS composite sheet at the back of the control cabinet to satisfy 240 minutes integrity performance.

Discussion

The test evidence R18G14-1A and R18G14-2A described the tests of the Hilti CFS-COS composite sheet that used to seal up the apertures that formed within concrete wall and slab construction to satisfy the fire resistance performance of up to 180 minutes or 240 minutes fire resistance performance with respect to BS 476: Part 20/22: 1987.

(a) The proposal to use the Hilti "CFS-COS" composite sheet to seal up the aperture within the concrete wall is considered directly supported by the test results of specimens '12' and '13' as tested in R18G14-2A. From the test, both cases had demonstrated the "CFS-COS" composite sheet with joints that had up to three panel jointed together, although some panels are not in their full sizes. And as similar case has been tested in R18G14-1A for horizontal configuration with up to six panels joined together. Based on this, it is reasonable to believe that the tested jointing method with the "CFS-COS" overlapping each other by 50 mm and screw fixed with M5 screws at maximum 300 mm c/c can provide the adequate engagement between. Provided 6 panels are in their full sizes, the maximum opening sizes that can be protected would be 2,630 mm high by 1,770 mm wide achieve the fire resistance performance of at least 180 minutes integrity. The fixing of the composite sheet shall be via 25 mm by 25 mm by 3 mm thick steel angle fixed to the supporting construction by M6 anchor bolts at 250 mm c/c.
(b) For the system requires to provide the fire resistance performance of 240 minutes integrity performance, the maximum sizes of 910 mm wide by 1,200 mm high which is the sizes of one "CFS-COS" composite sheet, and it is as tested in R18G14-2A that the system had achieved the 240 minutes integrity. The proposal is therefore directly supported by the test evidence.

5 CONCLUSION

The proposed use of Hilti "CP 636" firestop mortar, "CP617" putty pad, and "CFS-COS" composite sheet for the purpose of sealing up the lift-landing doorset related penetration seal as discussed in Section 4 of this report, is capable to maintain the fire resistance performance of up to 120 minutes, 180 minutes or 240 minutes integrity performance (and insulation performance for the usage of swich box backing) with respect to BS 476: Part 20/22: 1987.

6 DECLARATION BY APPLICANT

We, Hilti (Hong Kong) Limited, confirm that the material, component or element of structure, which is the subject of the test report being reviewed, has not to our knowledge been subjected to another test to the standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of another test to the standard against which the assessment is being made.

We are not aware of any information that could affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

7 VALIDITY

This assessment is based on test data, experience and the information supplied. The assessment will be invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. Any changes in the specification of product will invalidate this assessment. This assessment relates only to the specimen assessed and does not by itself infer that the product is approved under any other endorsements, approval or certification scheme. Since the appraisal method is under development, the laboratory reserved the right to supersede this assessment in case the appraisal method had been changed.

This report only relates to the specimen(s) tested and may only be reproduced by the sponsor in full, without comment, abridgement and modifications.

8 SIGNATORIES

Assessment by:

Dr. SZE Lip-kit
Test Consultant
Research Engineering Development
Façade Consultants Limited

Reviewed by:

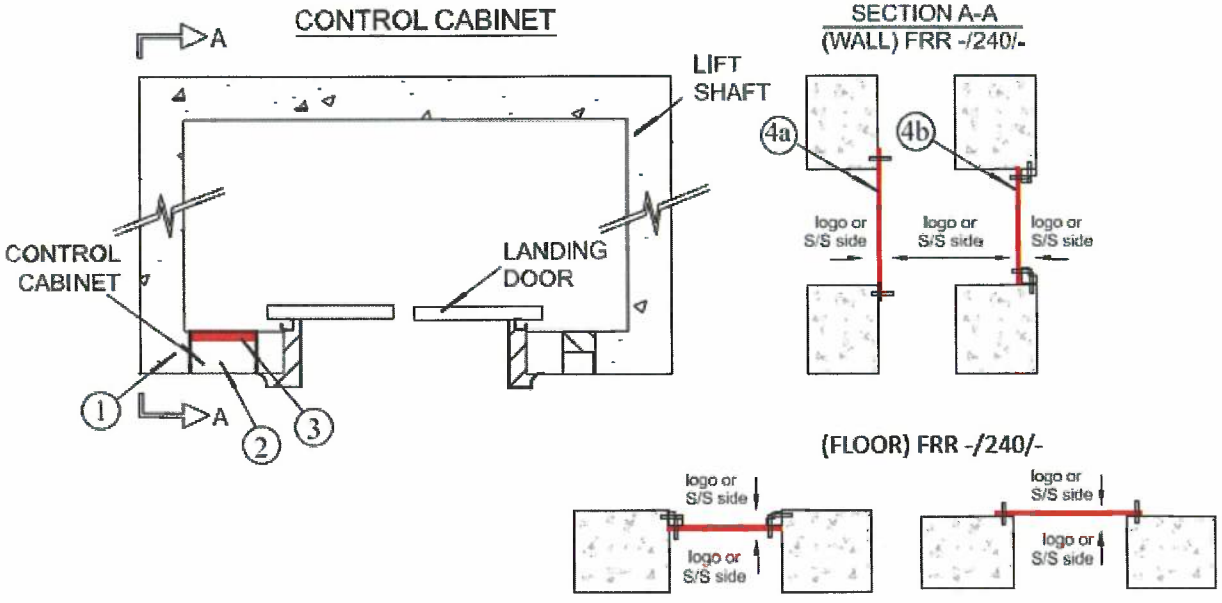
Ir Dr. YUEN Sai-wing, MHKIE (Fire)
Authorized Signature
Research Engineering Development
Façade Consultants Limited

T: +852 2807 0930 F: +852 2662 6105 E: fire@red.com.hk W: www.red.com.hk

APPENDIX – DRAWINGS PROVIDED BY THE CLIENT

Drawing refers to Section 4.3 on lift landing doorsets application by using CFS-COS

FIRE RESISTANCE RATING: UP TO -/240/-



1. CONCRETE WALL ASSEMBLY (120/120/120 F.R.R)
   - CONCRETE WALL OR FIRE-RATED BLOCKWALL
2. LIFT CONTROL CABINET
3. **CFS-COS FIRESTOP COMPOSITE SHEET** WITH EITHER LOGO OR S/S SIDE FACING THE FIRE SIDE, TO BE INSTALLED AT THE BACK OF CONTROL (SEE APPLICATION DETAILS)
4. CABINET WITH EITHER INSTALLATION METHOD AS INDICATED IN 4a AND 4b

Application Details:

	Layer(s) of CFS-COS	FRR
Wall / Floor Case (2630 mm Height x 1770 mm Width)	1	Up to -/180/-
Wall / Floor Case (910 mm Height x 1200 mm Width)	1	Up to -/240/-

- End of Report -

Buildings Department

屋宇署

Our Ref. 本署檔號：(24) BD GR/BM/2(185)
Your Ref. 來函檔號：
Tel. No. 電　話：848 2838
Fax No. 圖文傳真：840 0451

26 May 1994

Hilti (Hong Kong) Ltd.
Unit 3 5/F Harbour Centre Tower 2
8 Hok Cheung Street Hung Hom
Kowloon

Dear Sirs,

Fire Resisting Penetration Sealing System
As Supplied By Hilti (GB) Ltd.

Thank you for your letters dated 4.3.94 and 27.4.94 and the accompanying test/assessment reports on the above. You are asking for comments on the acceptability of the fire resisting product in the context of relevant provisions of the Buildings Ordinance, Chapter 123 of the Law of Hong Kong and its subsidiary legislation.

Under the Buildings Ordinance, "authorized persons" (i.e. architects, engineers or surveyors registered with the Building Authority) are required to supervise building works including the selection and installation of fire resisting products and to certify compliance with the Buildings Ordinance upon completion of works. Authorized persons are therefore responsible for ensuring the safety requirements inter alia of fire resisting products in the building projects which they have been appointed by the developer to coordinate and supervise.

In establishing the acceptability of fire resisting products, reference may be made to the performance standards laid down in Building (Construction) Regulation 90, the current Code of Practice for Fire Resisting Construction issued by the Building Authority and British Standard 476: Parts 20 to 24. Reliance may also be placed on the test/assessment report prepared by a recognized laboratory or an equivalent establishment.

The Buildings Department has a list of recognized laboratories. This is available for reference at our office :

Technical Administration (Building) Unit
Buildings Department
11/F Murray Building
Garden Road Hong Kong

Before fire resisting products are installed in a building project, the authorized person appointed for the project should be approached for advice and guidance.

Your test/assessment reports are returned herewith. In this respect, please note that paragraph 3 of my letter dated 25 January 1994 is no longer applicable. The delay in replying is regretted.

Yours faithfully,

(Patrick H. Tsui)
Technical Secretary/Building
for Director of Buildings

PT/rcy/ac

4/F-12/F, Murray Building, Garden Road, Hong Kong 香港花園道美利大廈四樓至十二樓

消 防 處
防 火 組
香港九龍尖沙咀東部廣華道1號
消防總部大廈

FIRE SERVICES DEPARTMENT,
FIRE PROTECTION BUREAU,
FIRE SERVICES HEADQUARTERS BUILDING,
No. 1 Hong Chong Road,
Tsim Sha Tsui, East, Kowloon,
Hong Kong.

本處檔號 Our Ref.: FPB 207/0005
來函檔號 Your Ref.: L026/92HK
電訊掛號 Telex: 39607 HKFSD HX } (24 小時 Hours)
圖文傳真 Fax: 852-3110066
852-3689744
電話 Tel. No.: 733 7596

29 April 1992

Hilti (Hong Kong) Ltd.,
Unit 3, 5/F, Harbour Centre,
Tower 2,
8 Hok Cheung Street,
Hunghom, Kowloon.

Dear Sirs,

"HILTI" Fire Prevention System

I refer to your letter of 30.3.92 and the enclosures attached thereto.

Based on the information contained in your letter under reference and the given test report, I understand that the captioned product is a building material which should be approved by the Director of Buildings and Lands. As such, I am not in a position to process your application and you are advised to refer your enquiry to the Director of Buildings and Lands, whose address is listed hereunder :-

The Director of Buildings and Lands,
(Attn.: Technical Secretary/Building, B.O.O.)
Murray Building,
Garden Road,
Central,
Hong Kong.

Please feel free to contact us should you have any other question in this matter.

Yours faithfully,

(TSE Yu-hing)
for Director of Fire Services

TYH/jt

Number and date should be quoted in reference to this letter

ARCHITECTURAL SERVICES DEPARTMENT 建築署
QUEENSWAY GOVERNMENT OFFICES, 66 QUEENSWAY, HONG KONG. 香港金鐘道六十六號金鐘道政府合署
FAX 852-2869 0289

Our Ref : ASD 16/92101/AML/APP 06 June 1997
Your Ref. : --------
Tel. No. : 2867 3631
Fax No. : 2877 0594

Hilti (HK) Ltd
17/F, Tower 6, China HK City,
33 Canton Rd,. TST

Dear Sirs,

Architectural Services Department
List of Acceptable Materials
Hilti Firestop Products
Ref. no. 0001P

I am pleased to inform you that approval has been given to include the above product/material in this Department's List of Acceptable Materials. Initially, this listing is for a probationary status and this will be reviewed after the submission of satisfactory performance reports on completion of projects undertaken by this Department where your product has been used.

The Architectural Services Department List of Acceptable Materials is a restricted internal document. This letter should not be used for commercial or marketing purposes and failure to comply with this may result in the removal of the product from the List.

Yours faithfully,

WM Tang

(W.M. TANG)
Technical Secretary/2
for Chief Architect/ Central Management Branch
Architectural Services Department

Filecode : 95202 - LIST_LE.DOC
WMT/WHY/by

Attn. : To whom it may concern

Date : 1 April 2025
Ref. : 039/FP/SC/25

Subject : Country of Origin- Hilti CP617 Firestop putty pad

Dear Sir / Madam,

Enclosed please find the information of Hilti CP617 Firestop putty pad .

Brand Name : Hilti

Model Name : Hilti CP617 Firestop putty pad

Manufacturer : Hilti Corporation

Address of Manufacturer : FL-9494, Principality of Liechtenstein.

Manufacturer Contact Person : Spencer Cheung

Supplier : Hilti (Hong Kong) Ltd

Address of Supplier : 701-704, 7/F, Tower A, Manulife Financial Centre,
223 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong

Supplier Contact Person : Spencer Cheung (+852 9732 1231)

Country of Origin : Canada

Should you have further questions, please do not hesitate to contact our Technical Representatives, Customer Service Hotline at 8228-8118, or email us at hksales@hilti.com.

Yours faithfully,

Spencer C.

HILTI (HONG KONG) LTD. MKT

Spencer Cheung
Head of Product Leadership Strategy

Hilti (Hong Kong) Ltd.
701-704 | Tower A | Manulife Financial Centre
223 Wai Yip Street | Kwun Tong
Kowloon | Hong Kong
P +852-8228 8118 I **F** +852-2954 1751
www.hilti.com.hk

Date: 22 June 2021

Ref.: 038/FP/BL/21

Subject: Hilti CP617 Firestop Putty Pads

To Whom It May Concern:

- The Hilti CP617 Firestop Putty Pad is manufactured in Canada.
- The Package of the Hilti CP617 Firestop Putty Pad can be completely recycled.
- There is no recycled content in the Hilti CP617 Firestop Putty Pad and it cannot be recycled.
- The Hilti CP617 Firestop Putty Pad does not share any rapidly renewable materials.
- The VOC content of the Hilti CP617 Firestop Putty Pad is <35 g/l.

If you would like to know more about Hilti solutions for LEED buildings or should you have any further questions, please do not hesitate to contact our Customer Service Hotline at 8228-8118 or email us at hksales@hilti.com.

Yours faithfully,

Bill Lee
Product Portfolio Manager
Hilti (Hong Kong) Ltd.

To whom it may concern

Date: 22nd April 2016

Dear Sir / Madam,

Subject: Hilti Firestop Products non-CFC and Ozone Confirmation

Referring to your enquiry about the captioned subject, please be advised that:

Hilti firestop products, CP617 Intumescent AcousticPutty Pad is free of CFC, HCFC nor other ozone depletion elements.

CFC, HCFC and ozone depletion elements were not used during the product process neither.

Should you have further questions, please do not hesitate to contact our Technical Representatives or Customer Service Hotline at 8228-8118.

Yours sincerely,

Andrew Lau
Product Manger

CFS-P BA, CP 617, CP 618, CP 619, CFS-D 1", CFS-D 25

Safety Data Sheet

according to the United Nations GHS (Rev. 4, 2011)

Date of issue: 12/12/2019 Revision date: 12/12/2019 Supersedes: 07/10/2019

Version: 3.2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	Mixture
Trade name	CFS-P BA, CP 617, CP 618, CP 619, CFS-D 1", CFS-D 25
Product code	BU Fire Protection

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	Firestop putty pad

1.3. Details of the supplier of the safety data sheet

Hilti (Hong Kong) Ltd.
701-704, 7/F, Tower A, Manulife Financial Centre
223 Wai Yip Street, Kwun Tong
Kowloon - Hong Kong
T +852 27734 700
hksales@hilti.com

Supplier
Hilti (Hong Kong) Ltd.
701-704, 7/F, Tower A, Manulife Financial Centre
223 Wai Yip Street, Kwun Tong
Kowloon - Hong Kong
T +852 27734 700
hksales@hilti.com

Department issuing data specification sheet
Hilti AG
Feldkircherstraße 100
9494 Schaan - Liechtenstein
T +423 234 2111
chemicals.hse@hilti.com

1.4. Emergency telephone number

Emergency number	Schweizerisches Toxikologisches Informationszentrum – 24h Service +41 44 251 51 51 (international) +852 27734 700

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to the United Nations GHS (Rev. 4, 2011)

Not classified

2.2. Label elements

Labelling according to the United Nations GHS (Rev. 4, 2011)

No labelling applicable

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

This mixture does not contain any substances to be mentioned according to the applicable regulations

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after skin contact	Wash skin with plenty of water. If skin irritation occurs: Get medical advice/attention.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects	Not expected to present a significant hazard under anticipated conditions of normal use.
Potential adverse human health effects and symptoms	Based on available data, the classification criteria are not met.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Firefighting instructions	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	Self-contained breathing apparatus. Complete protective clothing. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1.For non-emergency personnel

Emergency procedures	Evacuate unnecessary personnel.

6.1.2.For emergency responders

Protective equipment	For further information refer to section 8: "Exposure controls/personal protection". Equip cleanup crew with proper protection.
Emergency procedures	Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	On land, sweep or shovel into suitable containers.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Hygiene measures	Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	Store at ambient temperature.
Incompatible products	Strong bases. Strong acids.
Incompatible materials	Sources of ignition. Direct sunlight.
Storage temperature	-5 - 40 °C

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Additional information	The product has a pasty consistency. Exposure limit values for respirable dusts are not relevant for this product.

8.2. Appropriate engineering controls

Other information	Do not eat, drink or smoke during use.

8.3. Individual protection measures, such as personal protective equipment (PPE)

Hand protection	Wear protective gloves.
Eye protection	Chemical goggles or safety glasses
Skin and body protection	Wear suitable protective clothing

8.4. Exposure limit values for the other components

No additional information available

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid
Appearance	Pasty.
Molecular mass	Not determined
Colour	red.
Odour	characteristic.
Odour threshold	Not determined
pH	Not relevant
Relative evaporation rate (butylacetate=1)	No data available
Melting point	Not applicable
Freezing point	No data available
Boiling point	No data available
Flash point	Not applicable
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Flammability (solid, gas)	Not applicable,Non flammable.
Vapour pressure	No data available
Relative vapour density at 20 °C	No data available
Relative density	No data available
Density	1.6 g/cm³
Solubility	Water: Insoluble
Log Pow	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available
Explosive properties	No data available
Oxidising properties	No data available
Explosive limits	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions. Not established.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use. Not established.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7). Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
Skin corrosion/irritation	Not classified pH: Not relevant
Serious eye damage/irritation	Not classified pH: Not relevant
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified
Potential adverse human health effects and symptoms	Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute)	Not classified
Hazardous to the aquatic environment, long-term (chronic)	Not classified

12.2. Persistence and degradability

CFS-P BA, CP 617, CP 618, CP 619, CFS-D 1", CFS-D 25	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

CFS-P BA, CP 617, CP 618, CP 619, CFS-D 1", CFS-D 25	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Ozone	Not classified
Other adverse effects	No additional information available
Other information	Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	Dispose in a safe manner in accordance with local/national regulations.
Product/Packaging disposal recommendations	Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials	Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	RID
14.1. UN number			
Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name			
Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)			
Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group			
Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards			
Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available			

14.6. Special precautions for user

- Overland transport

- Transport by sea

No data available

- Air transport

No data available

- Rail transport

Carriage prohibited (RID)	No

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

No additional information available

SECTION 16: Other information

SDS Major/Minor	None
Date of issue	12/12/2019
Revision date	12/12/2019
Supersedes	07/10/2019

Indication of changes:

Section	Changed item	Change	Comments
			general update

Other information None.

SDS_UN_Hilti

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Hilti CP 617 Firestop Putty Pad Job Reference

Year	Project Name	Customer Name	Project type
2023	UNITED CHRISTIAN HOSPITAL	MS (HK) ENGINEERING LIMITED	Health
2023	HO MAN TIN STATION RES PACKAGE 1	SHUN CHEONG ELECTRICAL ENGINEERING	Residential
2023	LONG BIN - PUBLIC HOUSING PH 2	YAU LEE CONSTRUCTION CO LTD	Residential
2023	HANG TAI RD, MA ON SHAN AREA 86B PH 1&2 - HOU	CHINA STATE CONSTRUCTION	Residential
2023	WAN CHAI HOPEWELL CENTRE 2	SUNDART TIMBER PRODUCTS CO LTD	Hospitality
2023	ANDERSON ROAD QUARRY, SITE R2-8 HOUSING	UNISTRESS BUILDING CONSTRUCTION	Residential
2023	ANDERSON ROAD QUARRY, SITE R2-2	YAU LEE CONSTRUCTION CO LTD	Residential
2023	AREA 16 TUEN MUN (WEST OF HANG FU ST)	WOON LEE CONSTRUCTION CO LTD	Residential
2023	SUNG WONG TOI RD & TO KWA WAN RD	SUN FOOK KONG CONSTRUCTION LIMITED	Residential
2023	SAI SHA SHK SHAP SZE HEUNG, TPTL 157 DD165, 20	SANFIELD (MANAGEMENT) LIMITED	Residential
2024	SUNG WONG TOI RD & TO KWA WAN RD	SUN FOOK KONG CONSTRUCTION LIMITED	Residential
2024	UNITED CHRISTIAN HOSPITAL	MO BUILDING MATERIAL LIMITED	Health
2024	LONG BIN - PUBLIC HOUSING PH 2	YAU LEE CONSTRUCTION CO LTD	Residential
2024	CHINESE MEDICINE HOSPITAL TKO	CHINA STATE CONSTRUCTION	Health
2024	PRINCESS MARGARET HOSPITAL LAI KING BUILDIN	ATAL BUILDING SERVICES ENGINEERING	Health
2024	391 CHAI WAN RD	JUNEFAIR ENGINEERING CO. LIMITED	Residential
2024	KWAI CHUNG HOSPITAL PH2 & 3	SHUI ON JOINT VENTURE	Health
2024	ANDERSON ROAD QUARRY, SITE R2-8 HOUSING	UNISTRESS BUILDING CONSTRUCTION	Residential
2024	HANG TAI RD, MA ON SHAN AREA 86B PH 1&2 - HOU	CHINA STATE CONSTRUCTION	Residential
2024	KAI TAK AREA 4B, SITE 4, NKIL 6591	CHIT TAT ELECTRICAL ENGINEERING LTD	Residential
2025	TUEN MUN HOSPITAL EXT	CHEVALIER (CONSTRUCTION) CO LTD	Health
2025	SHATIN WATER TREATMENT - ADMINISTRATION BUI	CW-FWS JV	Office
2025	UNITED CHRISTIAN HOSPITAL	HIN TAT ENGINEERING LIMITED	Health