

FIRE TEST REPORT

FP11420-001

BUSH FIRE TEST ON WEEPA VENT 23-NGBW IN A BRICK VEENER WALL IN ACCORDANCE WITH AS 1530.8.1:2018

CLIENT
Weepa Products Pty Ltd
3/15 Donkin Street,
West End,
Queensland 4101
Australia

National Association of Testing Authorities, Australia (NATA) & International Accreditation New Zealand (IANZ) are signatories to ILAC Mutual Recognition Agreement. Report users are recommended to accept test reports in the name of either

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

TEST SUMMARY

Objective

To determine the bush fire performance of a Weepa vent model No. 23-NGBW when installed in a brick veneer wall and tested in accordance with AS 1530.8.1:2018 *"Methods for fire tests on building materials, components and structures, Part 8.1: Tests on elements of construction for buildings exposed to simulated bushfire attack – Radiant heat and small flaming sources."*

Test sponsor

Weepa Products Pty Ltd
3/15 Donkin Street,
West End,
Queensland 4101
Australia

Description of test specimen

The Weepa model No. 23-NGBW consisted of a polypropylene body with a stainless steel ember/vermin guard installed into a brick veneer wall.

Date of test

9th April 2019

Test results

Test results in accordance with AS 1530.8.1:2018, Methods for fire tests on building materials, components and structures – Part 8.1: tests on element of construction for buildings exposed to simulated bushfire attach – Radiant heat and small flaming sources:

Bush attach level BAL-A40

"This report details the methods of construction, the test conditions and the results obtained when the specific element of construction described herein was tested in accordance with test method of AS1530.8.1.

LIMITATION

The results reported here relate only to the item/s tested.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the BRANZ Services Agreement for this work.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

NATA

IANZ

TO WHOM IT MAY CONCERN

Both NATA (National Association of Testing Authorities, Australia) and IANZ (International Accreditation New Zealand) are signatories to the ILAC Mutual Recognition Arrangement. Under the terms of this arrangement, each signatory:

(i) recognises within its scope of recognition of this Arrangement the accreditation of an organisation by other signatories as being equivalent to an accreditation by its own organisation,

(ii) accepts, for its own purposes, endorsed* certificates or reports issued by organisations accredited by other signatories on the same basis as it accepts endorsed* certificates or reports issued by its own accredited organisations,

(iii) recommends and promotes the acceptance by users in its economy of endorsed* certificates and reports,

* *The word "endorsed" means a certificate or report bearing an Arrangement signatory's accreditation symbol (or mark) preferably combined with the ILAC-MRA Mark.*

Signed:

Jennifer Evans
NATA CEO

Date: 24 March 2014

Dr Llewellyn Richards
IANZ CEO

Date: 24th March 2014

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

FIGURES

TABLES

PHOTOS

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

SIGNATORIES

Author

P. Chapman
Senior Fire Testing Engineer
IANZ Approved Signatory

Reviewer

M. E. Godkin
Senior Fire Safety Engineer
BRANZ

DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION
01	22 August 2019	Initial Issue

1. TEST PROCEDURE

The test was conducted in accordance with AS 1530.8.1:2014 Methods for fire tests on building materials, components and structures, Part 8.1 *Tests on elements of construction for buildings exposed to simulated bushfire attack – Radiant heat and small flaming sources*, Section 15 and 20, for which the performance criteria of the specimen is the time, expressed in minutes, to failure under one or more of the following criteria.

The failure criteria for the test are the following;

a) Where a gap from the fire exposed face to the non-fire exposed face of the element through which a 3 mm diameter probe can penetrate during the 60 minute test period; or

b) Sustained flaming for more than 10 seconds on the non-fire side during the 60 minute test period; or

c) Flaming on the fire-exposed side at the end of the 60 minute test period; or

d) Where the specimen includes un-insulated areas, the radiant heat flux 365 mm from the non-fire side of the specimen exceeds 15 kW/m² during the 60 minute test; or

e) Mean and maximum temperature rises greater than 140 K and 180 k, respectively, on the non-fire side during the 60 minute test, except for glazed/uninsulated areas for which the radiant heat flux limits are applicable; or

f) Radiant heat flux 250 mm from the fire-exposed face of the specimen, exceeds 3 kW/m² between 20 minutes and 60 minutes after the commencement of the test; or

g) Mean and maximum temperatures of the internal faces of construction including cavities exceeding 250°C and 300°C respectively between 20 minutes and 60 minutes after commencement of the test.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

2. DESCRIPTION OF TEST SPECIMEN

2.1 General

2.1.1 Weepa 23-NGBW

The test specimen consisted of a polypropylene body nominally 75 mm high x 10 mm wide x 105 mm long with a 316 grade stainless steel ember/vermin guard. The body included two horizontal internal stiffeners equally spaced at approximately 1/3 centres. The stainless steel guard had three rows of nominal 1.8 mm holes through the face of the guard and was designed to pivot within the body at the top.

The Weepa was installed by hand to be flush with the exposed face of the brick wall.

2.1.2 Wall

The wall consisted of standard bricks nominally 75 mm high x 110 mm wide x 230 mm long. The wall was nominally 1,000 mm wide x 1,200 mm high with the vent positioned vertically at approximately mid height.

2.1.3 Conditioning

Construction of the brick wall occurred on 29 March 2019. The wall was left under ambient laboratory conditions until the installation of the specimens and subsequent testing on the 9th April 2019.

2.1.4 Material Selection

BRANZ was responsible for arranging for supply of the bricks and contracting a bricklayer to build the brick wall to meet the client's requirements. BRANZ was not involved in the selection of materials for the test specimen, all materials were supplied to BRANZ by Weepa Pty Ltd. The client was responsible for installation of the test specimen into the wall.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

3. TEST CONDITIONS AND RESULTS

3.1 General

The specimen was tested on 9th April 2019, at the BRANZ laboratories at Judgeford, New Zealand in the presence of the client.

The specimen temperature at the beginning of the test was 20°C.

A radiant panel was placed against a vertical furnace which was nominally 1,000 mm wide x 1,200 mm high. Prior to the bush fire test a calibration run was undertaken to determine the radiation vs distance from the radiant panel. During the bush fire test a heat flux meter was also used and the distance the wall was from the radiant panel adjusted to achieve the target heat flux as defined by the test standard.

The test specimen was subjected to the defined radiation level for 10 minutes then an observation period for a further 50 minutes. The test was terminated after 60 minutes.

3.2 Test procedure

The test procedure (as defined in AS 1530.8.1:2018) was as follows:

A shield was positioned between the test specimen and radiant panel. The crib was ignited following the procedure defined in the test standard (section 14.2.4) with an oxy/acetylene torch for 3 minutes. Once the crib was alight it was positioned below the vent with the base of the crib nominally 75 mm below the bottom of the vent.

When the crib was in position the shield was removed and the heat flux exposure conditions followed as per Table 1 (Table 14.3.1 of the test standard). A heat flux meter was positioned in the wall in close proximity to the vent. During the exposure period the distance was adjusted to maintain the required heat flux on the specimen. Once the exposure conditions reached 10 minutes the specimen was observed for a further 50 minutes.

A gas torch was available as a source of ignition of any volatiles being released from the test specimen on the fire exposed face.

3.3 Timber crib Class A

A timber crib (Class A) consisting of nominal 20 mm x 20 mm x 100 mm long Radiata pine sticks were made into a timber crib. The crib consisted of three rows with four stick per row.

The crib was conditioned at nominally 50°C for at least 24 hours prior to the test and placed in the laboratory conditions for a period of between 60 minutes to 120 minutes prior to the start of the test.

Before the start of the lighting procedure the timber crib weighed 215.5 g.

During the bush fire test the base of the crib was positioned nominally 75 mm below the bottom of the vent.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

3.4 Radiation Measurements

The heat flux meter used was a Medtherm device of the Gardon Type with a range of 0-50 kW/m² and fitted with a water jacket. The heat flux meter has an angle of complete vision of 180°.

One heat flux meter was located mid height of the wall and connected to a computer controlled data acquisition system which recorded the received radiation at 5 second intervals.

3.5 Test conditions

3.5.1 Bushfire radiant heat test profile

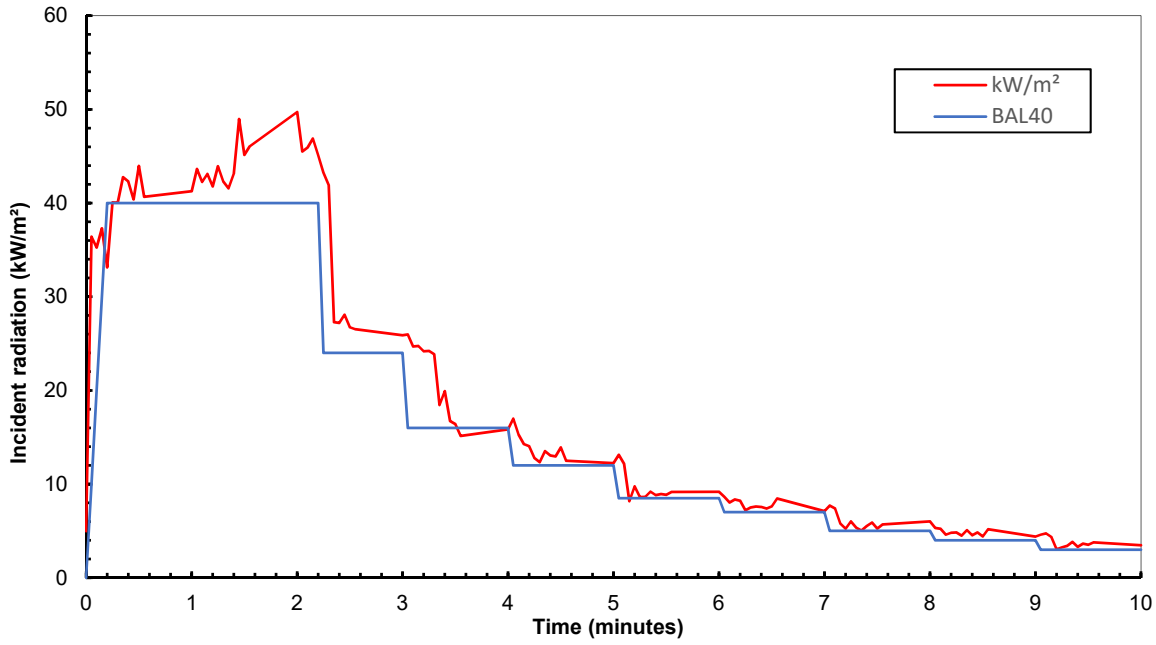
The target radiant heat flux test profile for a BAL40 rating from the test standard is shown in Table 1.

Table 1: Standard radiant heat test profile BAL40

Incident radiation (kW/m²)	Time from start of test (seconds)
40	20-140
24	140-180
16	180-240
12	240-300
8.5	300-360
7	360-420
5	420-480
4	480-540
3	540-600

Figure 1 shows the target radiant heat flux profile vs measured for the first 10 minutes of the test. In summary the incident radiation met the test standard requirements.

Figure 1: Test heat flux profile



branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

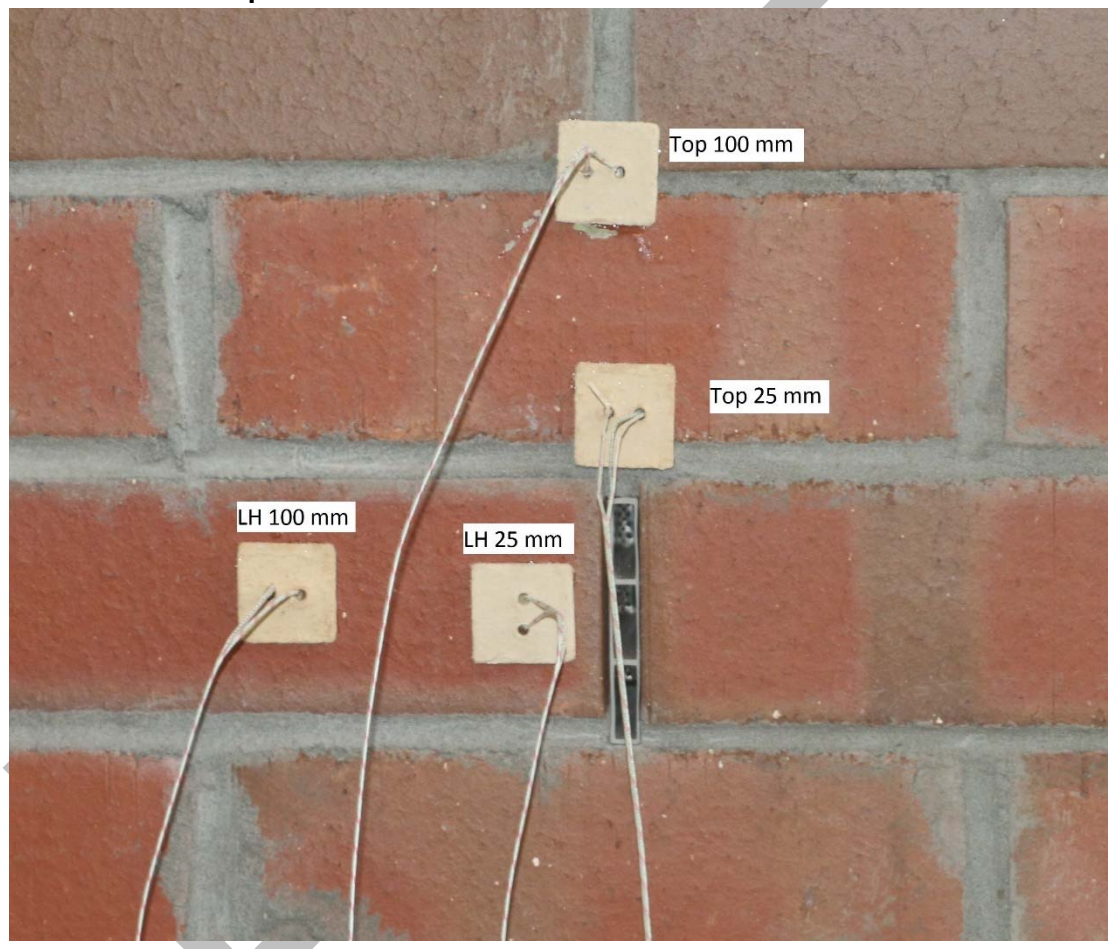
3.6 Specimen Temperature Measurement

The temperature on the unexposed face of the test element was measured using chromel-alumel thermocouples mounted on copper discs and covered with insulating pads, in accordance with the test standard. Thermocouples were placed on the brick wall 25 mm and 100 mm from one side and above the Weepa vent as shown in Figure 2.

All the thermocouples described above were connected to a computer controlled data logging system which recorded the temperatures at 5 second intervals.

A roving thermocouple was available for measuring temperatures elsewhere on the specimen.

Figure 2: Thermocouple Locations

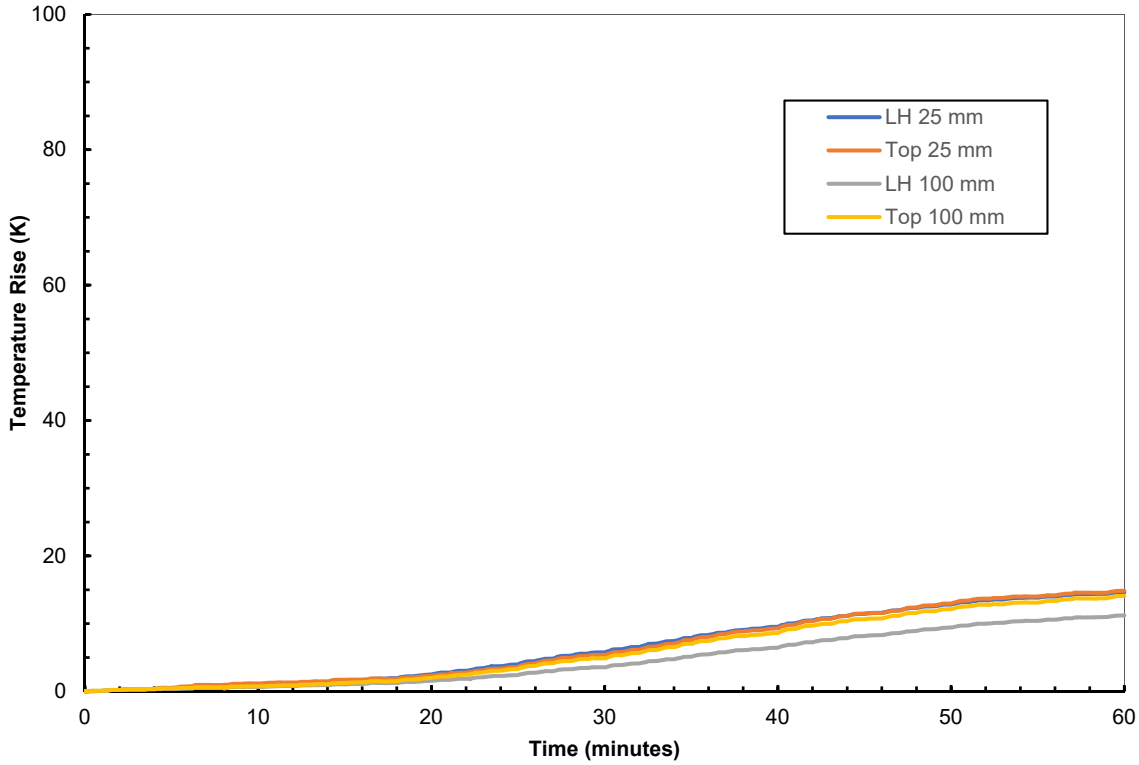


3.7 Insulation

The temperature rise of the unexposed face of the wall did not exceed the 140 K average or 180 K maximum temperature rise criteria for the duration of the 60 minute test. See Figure 3 for the temperatures measured on the wall during the fire test.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

Figure 3: Unexposed Wall Temperature Rise



3.8 Observations

Observations related to the performance of the specimen were at the times stated in minutes and seconds.

U = Observations from the unexposed face.
E = Observations from the exposed face.

Table 2: Test Observations

Time (Min:Sec)	Test face	Observations
Exposure period		
0:30	E	The weep was engulfed in flames from the crib.
2:29	E	No significant change to the Weep
4:20	E	No significant change.
8:00	E	The crib had stopped flaming.
10:00	-	Exposure period completed.
Observation period		
10:00 to 60:00	-	No significant observations. End of test

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

3.9 Performance criteria

The performance criteria is summarised in the Table 3 below:

Table 3: Performance criteria

Performance criteria		Time to Failure (minutes)	Position of failure
A gap from the fire exposed face to the non-fire exposed face greater than 3 mm		No failure	-
Sustained flaming for 10 seconds on the non-fire side		No failure	-
Flaming on the fire-exposed side at the end of the 60 minute test period		No failure	-
Radiant heat flux 365 mm from the non-fire side exceeding 15 kW/m²		Not applicable	-
Mean and maximum temperature rises greater than 140 K and 180 K		No failure	-
Radiant heat flux 250 mm from the specimen, greater than 3 kW/m² between 20 minutes and 60 minutes.		No failure	-
Mean and maximum temperature of internal faces exceeding 250°C and 300°C respectively between 20 minutes and 60 minutes after commencement of test		Not applicable	-
Crib class	A	Peak heat flux	40 kW/m²

The 23-NGBW Weepa did not fail the performance criteria for the duration of the test an achieved the following rating

Bush attack level BAL-A40

4. SUMMARY

Test results in accordance with AS 1530.8.1:2018, Methods for fire tests on building materials, components and structures – Part 8.1: tests on element of construction for buildings exposed to simulated bushfire attach – Radiant heat and small flaming sources:

Bush attach level BAL-A40

"This report details the methods of construction, the test conditions and the results obtained when the specific element of construction described herein was tested in accordance with test method of AS1530.8.1.

5. APPLICATON OF RESULTS

The results achieved at a particular peak heat flux level automatically apply to lower heat flux levels with the same size or smaller crib.

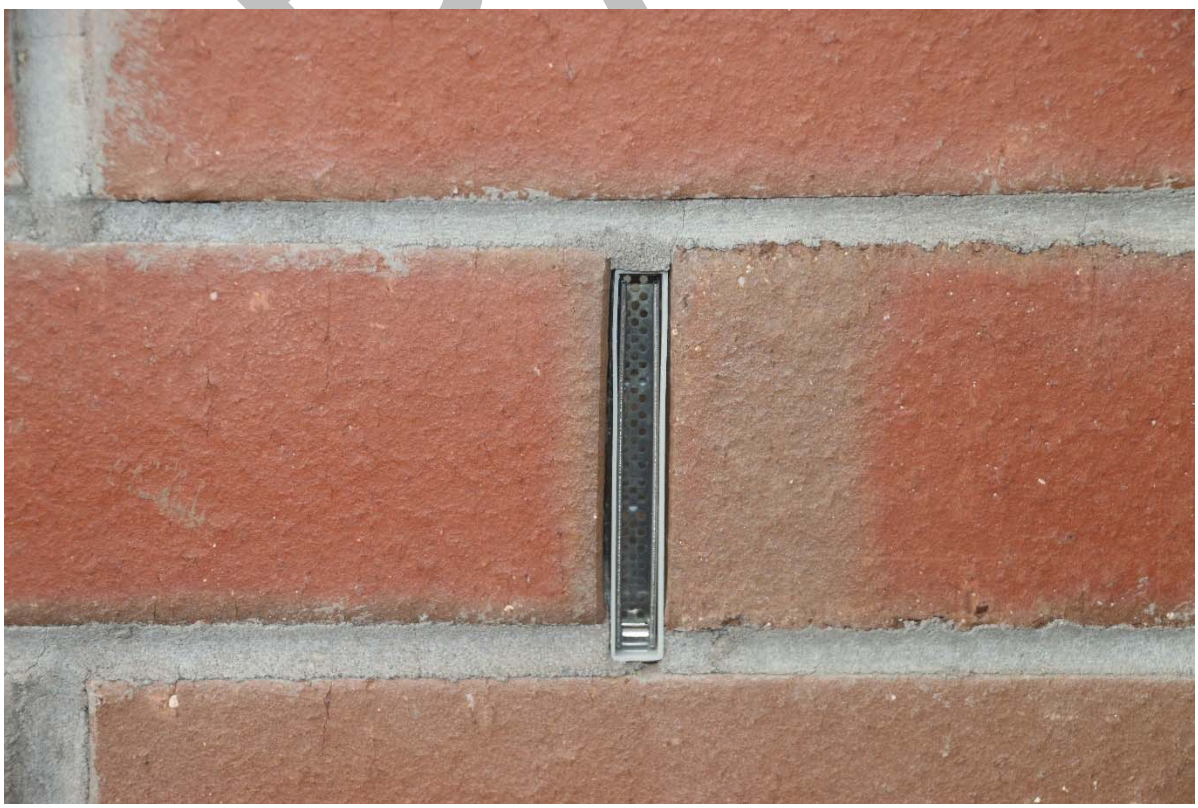
Example: If a specimen achieves a BAL of A40 it automatically qualifies for BALs of A29, A19and A12.5 but not B and C levels because Class B and class C cribs are larger.

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

PHOTOS

Photo 1: Test specimen exposed face prior to start of test with guard open

Photo 2: Test specimen exposed face before start of test



branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz

Photo 3: Test specimen exposed face with crib

Photo 4: Test specimen exposed face at the end of the test

branz.nz | 1222 Moonshine Rd, RD1, Porirua 5381, Private Bag 50 908, Porirua 5240, New Zealand | Phone +64 4237 1170 | branz@branz.co.nz