BRITE DECKING (PTY) PTY LTD.
TEST REPORT

SCOPE OF WORK
AS 1530.8.1:2018 TESTING ON "TITANIUM" BETTER WOOD, MODEL D140-T24

REPORT NUMBER
201118005SHF-001

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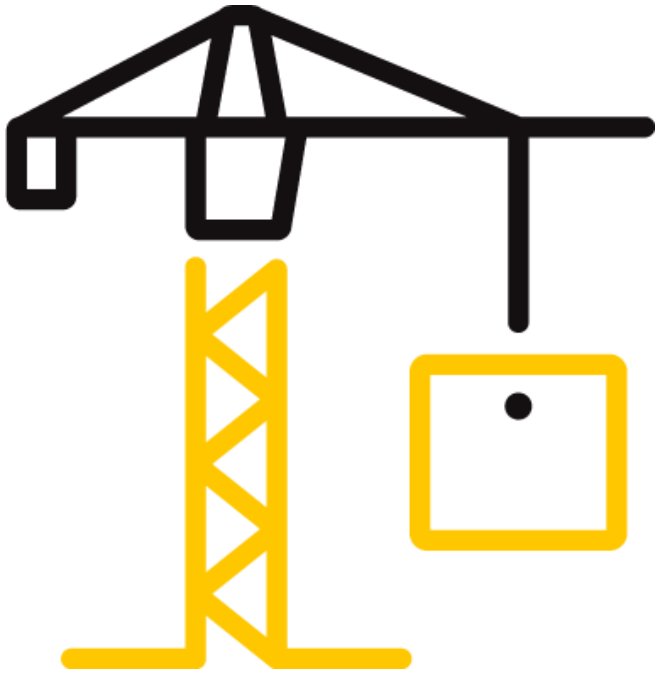

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REPORT ISSUED TO

BRITE DECKING (PTY) PTY LTD.
Encompass Business Park, D3/101 Rookwood Road, Yagoona, NSW2199, Australia

SECTION 1

SCOPE

Intertek has conducted an evaluation for BRITE DECKING (PTY) PTY LTD. to determine the simulated bushfire attack characteristics of the "TITANIUM" Better Wood, Model D140-T24. This evaluation began on November 18, 2020 and was completed on January 04, 2021. The test was conducted on November 24, 2020.

The test was conducted 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, Section 21 SPECIFIC PROCEDURES FOR DECKS.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

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SECTION 2
SUMMARY OF TEST RESULTS

Product Name: "TITANIUM" Better Wood
Model: D140-T24

The test assembly satisfied the performance requirements for the following bushfire attack level:

PERFORMANCE CRITERIA	RESULTS
Bushfire attack level	**BAL: A29**

The test was discontinued after a period of 60 minutes in according to the test method.

SECTION 3
TEST METHOD/DEVIATION

The specimen was evaluated in accordance with the following:

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, Section 21 SPECIFIC PROCEDURES FOR DECKS*

AS 1530.4:2014, *Methods for fire tests on building materials, components and structures, Part 4: Fire-resistance test for elements of construction*

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SECTION 4
MATERIAL SOURCE/INSTALLATION

Test specimen was provided to Intertek directly by the client and was not independently selected for testing. Test specimen was received at the Evaluation Center on November 17, 2020.

The manufacturer of test specimen was BETTO WOOD NEW MATERIAL TECH. CO.; LTD, located at Building 10#, No.6 HeShi Rd., QiaoTou Town, DongGuan City, China.

A description of the test assembly is given in the table below. The description of the specimen is based on information provided by the sponsor of the test. All values quoted below are nominal, unless tolerances are given.

NO	ITEM NAME	SPECIFICATION
1	Decking board	"TITANIUM" Better Wood; Main component: ASA Resin (12%), Rigid PVC Rersin (20.4%), Calcium Carbonate (26%), Talcum Powder (10%), Wood Fiber (25%); Density: 0.80±0.05 kg/cm^3; Size: 140 mm wide × 24 mm thick × 750 mm long
2	Decking screws	Type: D/T screw Material: Stainless steel 304; Size: Cross C/H ø4x3/4”; Cross C/H ø4x1/2”;
3	Joist	Material: Galvanized steel; Section Size: 40 mm × 40 mm × 1.5 mm thick The 1800m long by 750mm wide joist consisted of 4 galvanized steel tubes and 5 transverse galvanized steel tubes. Each end of galvanized steel tube was weld together.
4	Fastener	Material: 1.5 mm thick Stainless steel 304; Size: 42 mm × 42 mm × 12 mm, Installation: Inserted into the groove of the decking boards and secured to the joists using decking screws
Fixing	13 pieces of 750 mm long "TITANIUM" Better Wood were placed side by side and secured by D/T screws in conjunction with fasteners on steel joist. The space between each decking board was approximately 3 mm.	

The sample ID number assigned by the test lab is S201118005SHF.001.

The drawings of the "TITANIUM" Better Wood and test wall construction can be found in Section 6 and 7 respectively.

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The test was conducted 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, Section 21 SPECIFIC PROCEDURES FOR DECKS.

The test assembly comprised a nominal 1800 mm wide × 750 mm deep × 450 mm high deck that was set within a 1800 mm wide × 250 mm deep recess formed within a nominal 3000 mm × 3000 mm wall system which met the minimum requirements as specified by AS 3959 for the specified exposure level. The joists of the deck were supported by steel bars from the underside to get a 450 mm height. The underside of the deck is designed not to be enclosed at the request of the sponsor.

The deck consisted of "TITANIUM" Better Wood boards that were 140 mm wide × 24 mm thick, that were installed perpendicular to the wall system with approximately 3 mm spacing between each board. The boards were secured to joists with ø4x1/2” long decking screw in conjunction with the fastener.

The wall system met the minimum deemed to satisfy requirements of AS 3959 for the prescribed exposure level and consisted of a metal framed wall system of 45 mm × 45 mm studs clad with two layers of 12 mm thick standard plasterboard to the exposed side and the unexposed side respectively.

Prior to commencement of the test, furnace and radiant panel were preheated to steady state conditions with the specimen shielded from the radiant heat. A calibration run was undertaken to establish the position and radiometer reading that correspond to the required radiant heat flux at the surface of the specimen. Radiation distribution are adjusted so that the average of the four heat flux measurements at the quarter points were 0.75 + 25-15% of the value measured at the central position.

After the preheating and calibration run, positioning the test assembly in the front of the furnace and radiant panel, and then burning cribs were located at assigned rebate corner. The timer was started. Temperatures within the wall and eaves were monitored using thermocouples and the data was recorded. Radiant heat flux was monitored using radiometer and the data was recorded. Periodic observations were made of the fire exposed face and the non-fire exposed face of the test assembly during the simulated bushfire test.

Position for measurement of internal maximum temperature and radiant heat flux were presented in the drawing of Section 8.

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SECTION 5
TEST RESULTS

Performance criteria		Time to failure (min)	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 s on the non-fire side		No failure	—
Flaming on the fire-exposed side at the end of the 60 min test period		No failure	—
Radiant heat flux 365 mm from the non-fire side exceeding 15 kW/m^2		No applicable	—
Mean and maximum temperature rises greater than 140 K and 180 K		No applicable	—
Radiant heat flux 250 mm from the specimen, greater than 3 kW/m^2 between 20 min and 60 min		No failure	—
Mean and maximum temperature of internal faces exceeding 250°C and 300°C respectively between 20 min and 60 min after commencement of test.		No failure	—
Flaming of deck assembly extends more than 500 mm in any direction from the rear and side walls		No failure	—
Crib class	A	Peak heat flux	29 kW/m^2

The test specimen therefore satisfied the applicable performance criteria of **BAL: A29.**

A full set of test data is included in Section 9, and photographs have been presented in Section 10.

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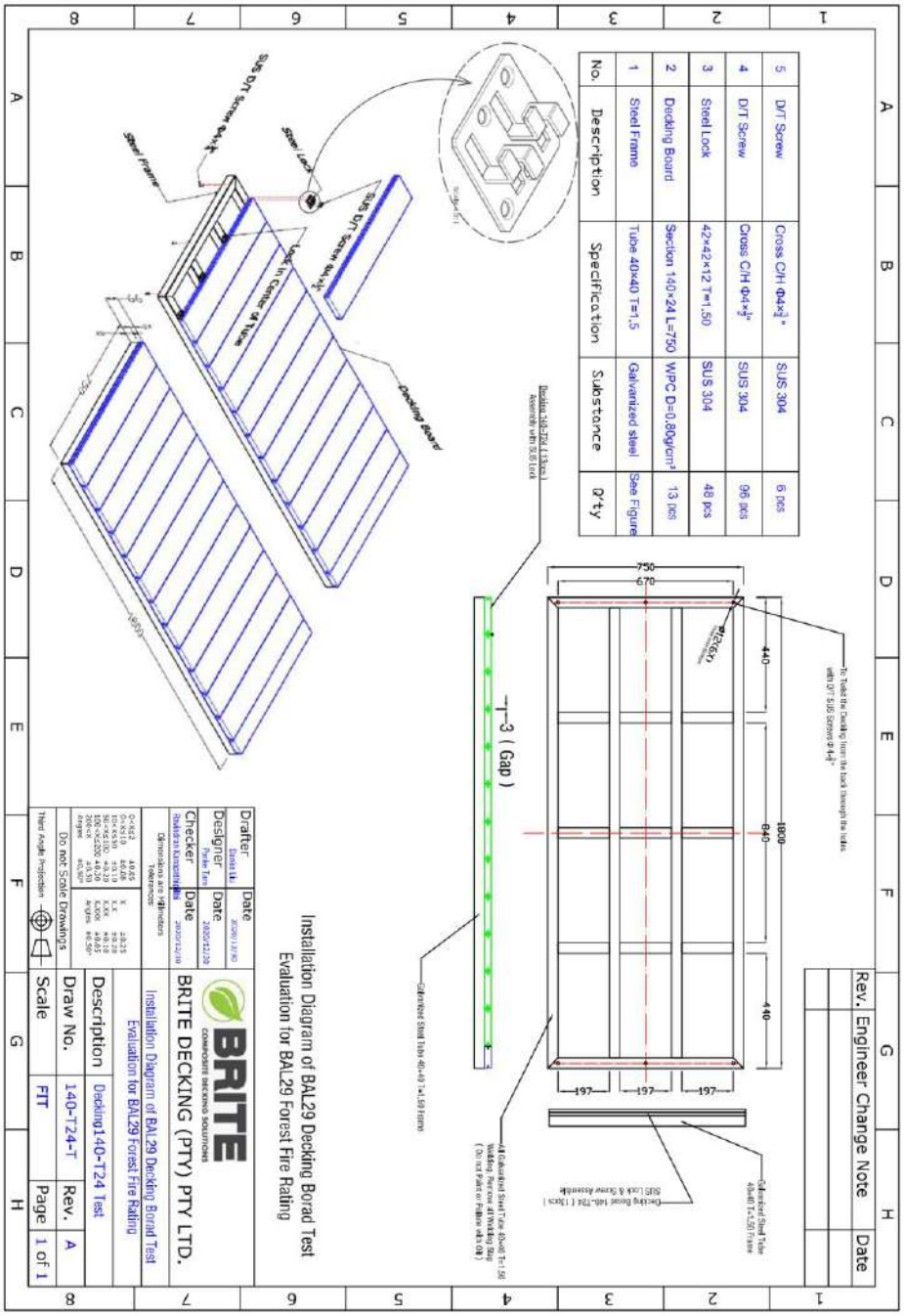
SECTION 6

TEST SAMPLE DRAWINGS



Dimension drawing of the test specimen

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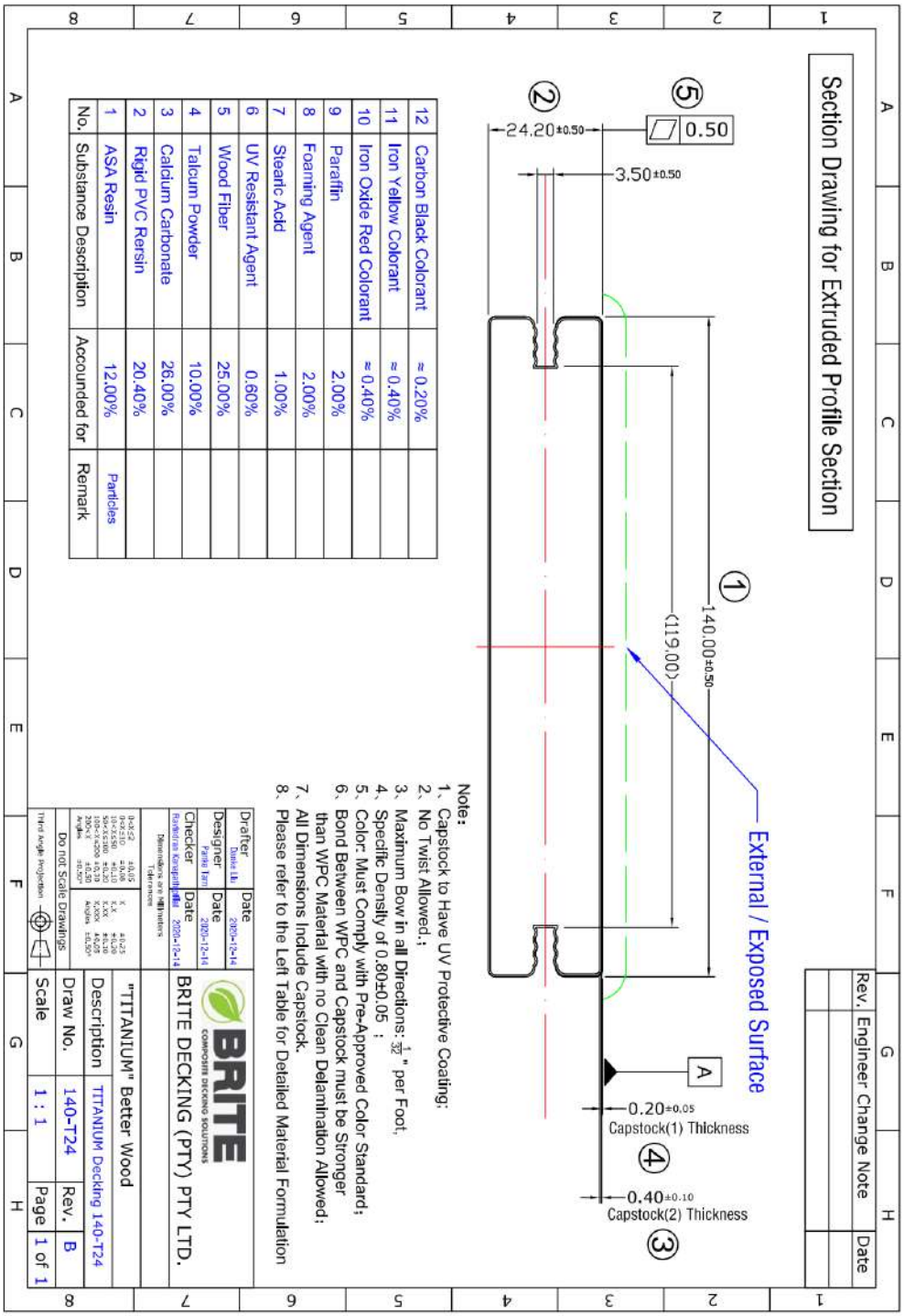

Deck profiles

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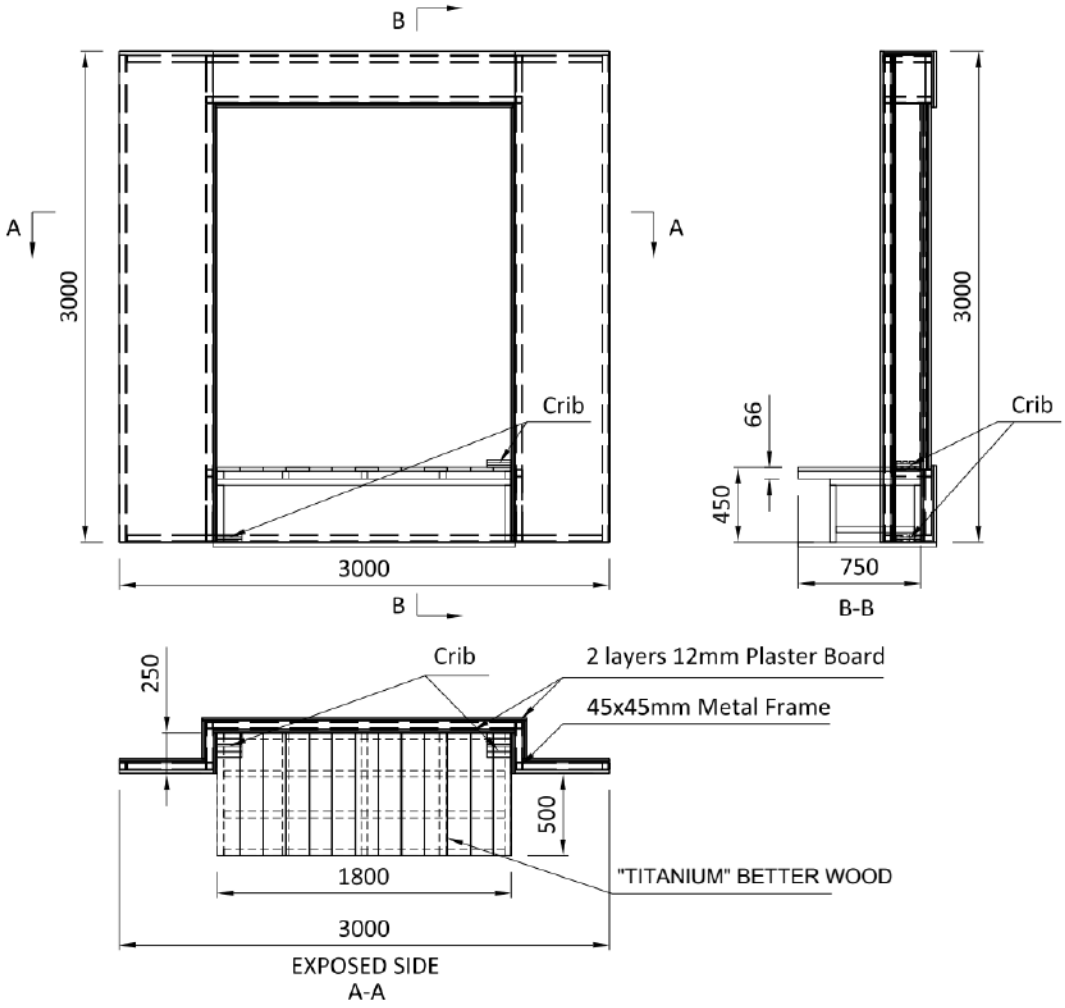
SECTION 7

TEST WALL CONSTRUCTION DRAWING



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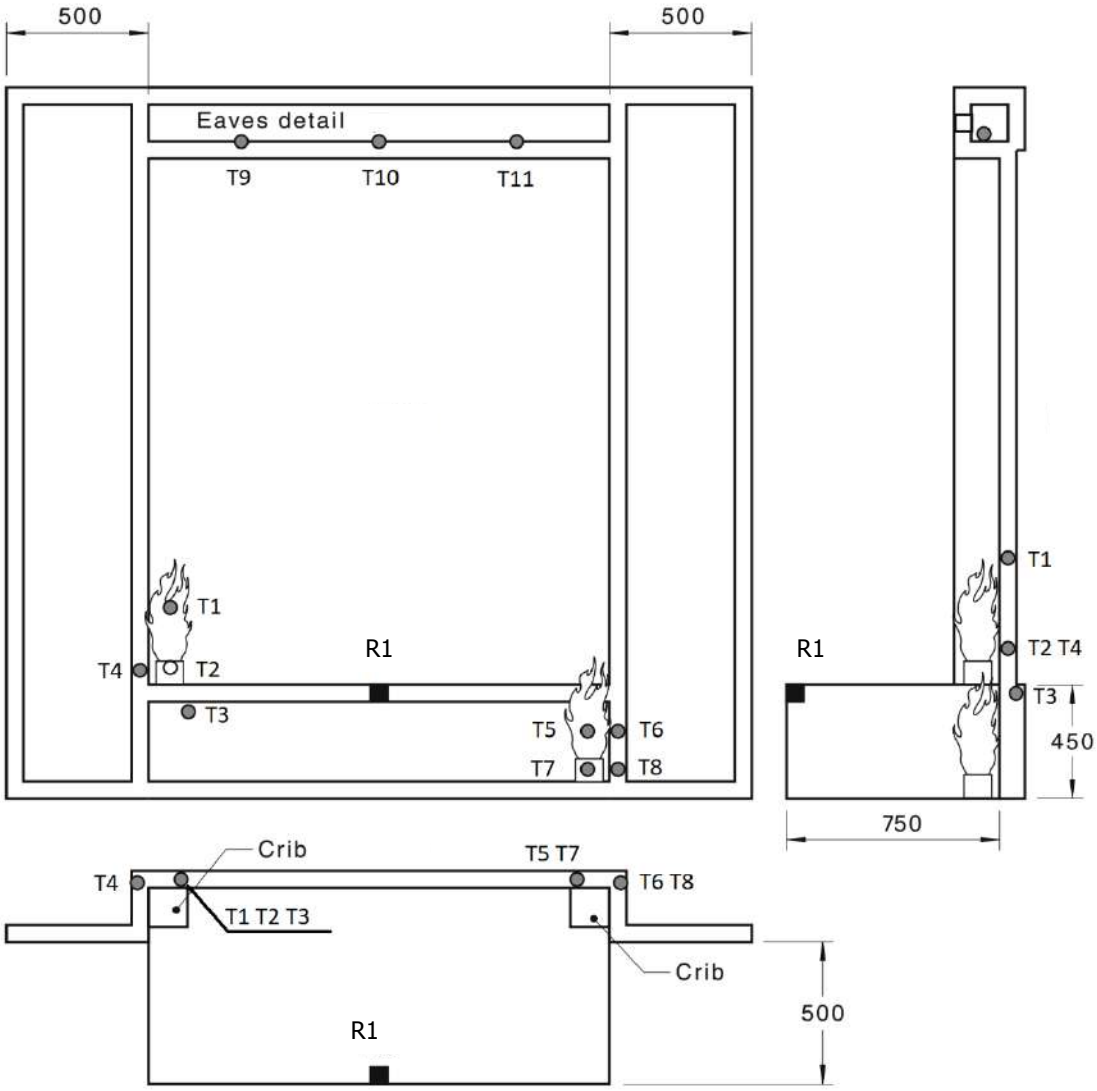
SECTION 8

TEST MEANSUREMENT DATA



Legend:

● = Position for internal maximum temperature of the wall and eave
■ = Location for radiant heat flux

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SECTION 9
TEST DATA

Standards: 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

Procedure: Part 8.1: Tests on elements of construction for buildings exposed to simulated bushfire attack-Large flaming sources

Conditioning: According to AS 1530.8.1, Section 12

Equipment:

ITEM	ID
Vertical furnace	SH1097
Test Clock	SH1042
Ambient temperature gauge	SH1097-11
Specimen thermocouple	SH1097-12
Heat flux meter	SH1093

Exposure Conditions:	According to AS 1530.8.1, Section 3.2, 14.2, 14.3
Test apparatus:	According to AS 1530.4 and 1530.8.1, Section 11
Conditioning:	According to 1530.8.1, Section 12
Test Specimen:	According to AS 1530.8.1, Section 15 through 22
Installation of test specimen:	According to AS 1530.8.1, Section 15 through 22
Heat flux meter:	According to AS 1530.8.1, Clause 11. (c)
Specimen Thermocouples:	According to AS 1530.4 and 1530.8.1, Clause 11. (g)
Test Procedure:	According to AS 1530.8.1, Section 14

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Test Observations:

Time		All observations are from the unexposed face unless noted otherwise.
Mins	Secs	
00	00	One type A burning timber crib is located at a rebate corner on the upper surface of the deck, and another type A burning timber crib is located at the other rebate corner under the deck. The burning crib test starts. The test assembly is to be moved to the assigned position with radiation 29kw/m^2 in the front of furnace and radiant panel and lasted 120s, the radiant heat exposure test starts.
01	43	The pilot ignition source is applied to the position of smoke emission of the specimen with 10s and it is not ignited.
02	05	The pilot ignition source is applied to the position of smoke emission of the specimen with 10s and it is not ignited.
02	20	The test assembly moved to second assigned position with radiation 21kw/m^2 and exposed for 40s. Heavy smoke issues form top surface of the deck.
03	00	The test assembly moved to third assigned position with radiation 14kw/m^2 and exposed for 60s. The top surface of the deck turns black.
03	10	The pilot ignition source is applied to the position of smoke emission of the specimen with 10s and it is not ignited.
03	50	The pilot ignition source is applied to the position of smoke emission of the specimen with 10s and it is not ignited.
04	00	The test assembly moved to fourth assigned position with radiation 11kw/m^2 and exposed for 60s.
04	30	The pilot ignition source is applied to the position of smoke emission of the specimen with 10s and it is not ignited.
05	00	The test assembly moved to fifth assigned position with radiation 8kw/m^2 and exposed for 60s.
06	00	The test assembly moved to sixth assigned position with radiation 6.5kw/m^2 and exposed for 60s.
07	00	The test assembly moved to seventh assigned position with radiation 5kw/m^2 and exposed for 60s.
08	00	The test assembly moved to eighth assigned position with radiation 3.5kw/m^2 and exposed for 60s. There is no smoke issued from the top surface of the deck.
09	00	The test assembly moved to ninth assigned position with radiation 3kw/m^2 and exposed for 60s.
10	00	The test of radiant heat exposure is discontinued. Neither flaming nor through gap are observed on unexposed side of test assembly.
11	52	These two burning timber cribs are extinguished, but the flaming is observed at the rebate corner on the upper surface of the deck.

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Time		All observations are from the unexposed face unless noted otherwise.
Mins	Secs	
20	00	A radiant heat flux is positioned at a distance 250mm from the fire-exposed face of the deck and measurement of incident radiant heat starts.
25	20	The flaming is extinguished at the rebate corner on the upper surface of the deck and burns through decking board.
50	00	No significant change on exposed side and unexposed side of test assembly.
60	00	Observation of 50 min period is discontinued

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Heat flux data:

Incident heat flux together with heat flux profiles specified in the standard

Time/ Secs	Specified Heat Flux/ kW/m^2	Incident Heat Flux / kW/m^2
0	0	0.0
20	29	28.8
40	29	29.3
60	29	29.6
80	29	30.2
100	29	29.0
120	29	29.1
140	29	29.2
160	21	25.7
180	21	24.1
200	14	17.2
220	14	17.1
240	14	14.5
260	11	13.5
280	11	11.6
300	11	11.1
320	8	10.5
340	8	8.4
360	8	8.4
380	6.5	8.4
400	6.5	6.7
420	6.5	6.6
440	5	6.6
460	5	5.5
480	5	5.4
500	3.5	4.3
520	3.5	3.9
540	3.5	4.0
560	3	3.9
580	3	3.9
600	3	3.5

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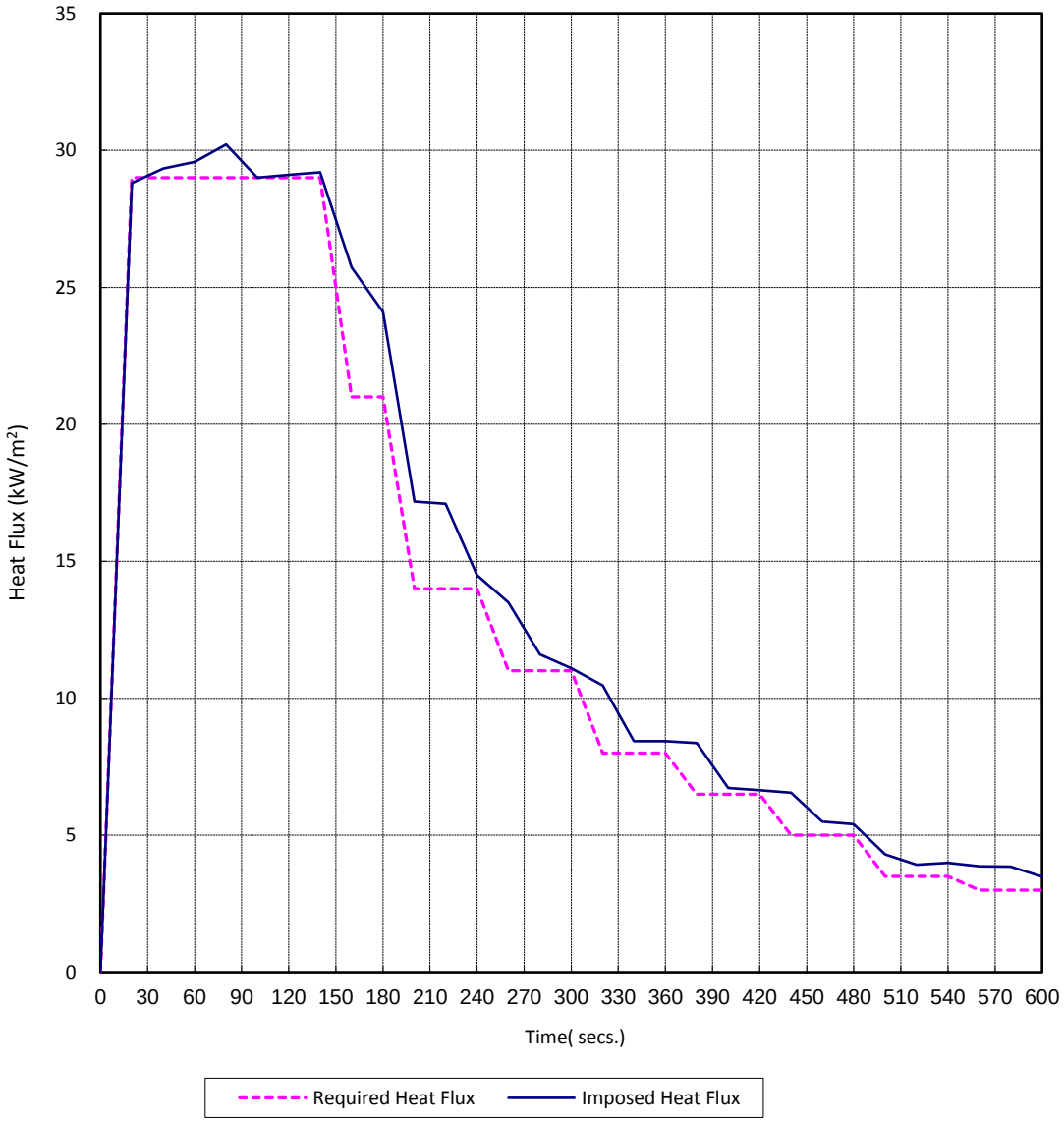
Graph for imposed heat flux and heat flux profiles specified in the standard



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Radiant heat flux:

R - At a distance of 250mm from the centre of exposed side of the specimen.

Time Mins	R (kW/m^2)
0	/
2	/
4	/
6	/
8	/
10	/
12	/
14	/
16	/
18	/
20	0.15
22	0.14
24	0.12
26	0.12
28	0.08
30	0.07
32	0.07
34	0.06
36	0.05
38	0.06
40	0.03
42	0.04
44	0.04
46	0.04
48	0.02
50	0.04
52	0.01
54	0.03
56	0.02
58	0.03
60	0.03

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Internal temperatures

Time Mins	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	T5 (°C)	T6 (°C)
0	23	20	17	17	17	17
2	26	22	17	19	17	17
4	47	36	18	35	24	21
6	66	57	19	59	53	45
8	68	62	22	65	63	59
10	67	63	24	64	64	62
12	64	60	26	64	62	61
14	62	57	28	67	59	57
16	60	54	30	72	56	54
18	61	58	32	75	53	52
20	63	66	33	78	52	51
22	64	73	33	85	53	52
24	65	76	34	93	54	52
26	65	75	34	102	55	53
28	65	73	35	108	55	53
30	64	71	35	109	55	53
32	63	69	35	109	54	52
34	62	68	34	107	54	52
36	61	66	34	105	53	51
38	60	66	34	102	52	50
40	59	67	34	99	51	49
42	57	67	33	96	50	49
44	56	66	33	93	49	48
46	54	64	33	91	48	47
48	53	62	32	87	47	46
50	52	61	32	84	46	45
52	51	59	31	81	45	44
54	49	58	31	77	44	43
56	48	57	31	74	43	42
58	47	56	30	72	42	41
60	46	54	30	69	41	40

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Internal temperatures

Time Mins	T7 (°C)	T8 (°C)	T9 (°C)	T10 (°C)	T11 (°C)
0	17	16	20	24	22
2	17	16	22	25	23
4	26	23	27	30	28
6	46	45	39	42	41
8	54	54	50	51	51
10	57	58	55	54	55
12	57	58	56	55	56
14	58	57	56	54	55
16	57	56	56	54	54
18	57	57	55	54	54
20	57	57	54	54	53
22	56	56	53	54	53
24	56	56	53	54	53
26	59	59	53	53	52
28	63	63	52	53	52
30	66	67	51	52	51
32	68	68	50	51	50
34	70	69	49	50	49
36	70	69	48	49	48
38	70	69	47	48	47
40	69	68	46	47	46
42	69	68	45	46	45
44	68	67	44	45	44
46	67	66	43	44	43
48	65	64	42	43	42
50	64	62	41	42	41
52	62	60	40	41	41
54	60	58	40	40	40
56	57	55	39	40	39
58	55	53	38	39	38
60	53	51	37	38	38

SECTION 10
PHOTOGRAPHS

Fig. 1 Exposed Side Prior to the radiant heat test

Fig. 2 Exposed Side during the radiant heat test

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Fig. 3 Exposed Side after the radiant heat test

Fig. 4 Exposed Side after 60 minutes

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SECTION 11
REVISION LOG

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0	2021-01-04	N/A	Original Report Issue