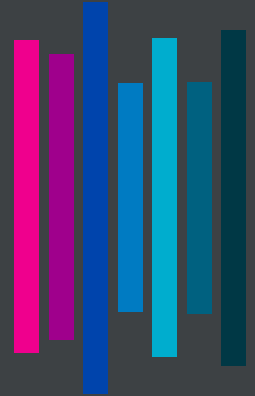


EXOVA



Product Testing and Compliance

Keith Nicholls

**Manager Product Testing & Assessments – Exova
Warringtonfire Australia**

New Buildings In Bushfire Prone Areas

Principle of Test Methods



- What are the Construction Requirements
- How do you know they are met?
- What are the test methods about?
- What does the documentation look like?
- What are the next steps for industry?

New Buildings In Bushfire Prone Areas - Testing

Principle of Test Methods

NCC (BCA)

Referenced by legislation

Sets minimum technical requirements

References AS3959 or other documents that reference AS3959

Include state variations to regulations for bushfire

AS3959-2009

Referenced by NCC (BCA)

Sets out prescriptive construction requirements

Sets out testing as an alternate approach to meet standard

Test Standards

AS1530.8.1

AS1530.8.2

AS1530.4

AS1530.2

AS1530.1

AS3837

New Buildings In Bushfire Prone Areas

Principle of Test Methods



AS 1530.8 Part 1- Radiant Heat and Small Flaming Sources

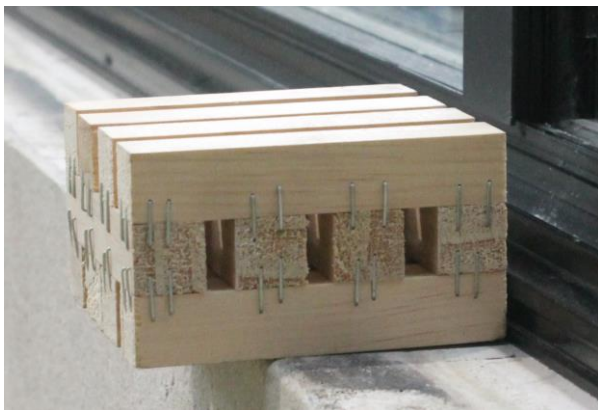
- Called up by AS3959 for BAL 12.5-40 for all elements of construction
- Elements are to radiant heat, simulated burning debris and simulated burning embers.
- The response of the specimen is monitored during and for some time after the radiant exposure to detect the potential for re-ignition.

New Buildings In Bushfire Prone Areas

Principle of Test Methods



Exposure Sources - Radiant Heat and a small high intensity heat source with a small ignition source if required.



New Buildings In Bushfire Prone Areas

Principle of Test Methods



Monitor behaviour

Gap formation – 3mm Gap Gauges

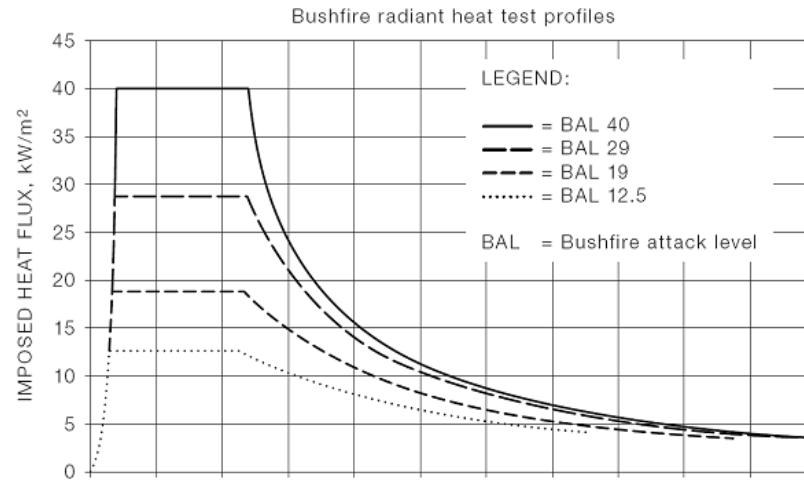
Flaming – Visual

Radiation – Radiometer /temperature non fire side, Temperature – Thermocouples measure temperature of cavities and enclosed spaces



New Buildings In Bushfire Prone Areas

Principle of Test Methods



	Time (mins) -15s to 0	0-10	10-20mins	20-60mins
Exposure Condition				
Ignited Crib				
Radiation				
Small Gas Flame				
Performance Criteria				
Formation of through-gaps greater than 3 mm				
Sustained flaming for 10 s on the non-fire side				
Flaming on the fire-exposed side at the end of the 60 min test period				
Radiant heat flux 365 mm from the non-fire side exceeding 15 kW/m ²				
Mean and maximum temperature rises greater than 140 K and 180 K				
Radiant heat flux 250 mm from the specimen, greater than 3 kW/m ² between 20 min and 60 min				

New Buildings In Bushfire Prone Areas

Principle of Test Methods



AS 1530.8 Part 2 – Large Flaming Sources (BAL FZ)

- Called up by AS3959 for BAL FZ for all elements of construction.
- Utilizes the standard heating regime of AS 1530.4-2005 for 30 minutes.
- The response of the specimen is monitored during and for some time after the radiant exposure to detect the potential for re-ignition.
- A lot more severe exposure than AS1530.8.1
- A lot stricter failure criteria and AS1530.4

New Buildings In Bushfire Prone Areas

General Principles AS1530.8.2

Exposure - The furnace burns Propane which uses added air as an oxidiser, theoretically this will produce an Adiabatic Flame Temperature of 2392°C.



Monitor – Gap formation, Temperature non fire side, temperature of cavities and enclosed spaces, flame and radiation on fire after exposure as for AS1530.8.1



New Buildings In Bushfire Prone Areas

General Principles AS1530.8.2 - Cont

Monitor – Gap formation, Flame/radiation/temperature non fire side, temperature of cavities and enclosed spaces , flame and radiation on fire after exposure as for AS1530.8.1

New Buildings In Bushfire Prone Areas

Principle of Test Methods



AS 1530.4 – Fire resistance test of elements of construction

- Called up by AS3959 for as an alternate method for meeting BAL FZ requirements as -/30/-
- Standard heating regime of AS 1530.4-2005 is applied for 30 minutes, though NO RADIATION CRITERIA is included in AS1530.4-2005 for windows.
- The response of the specimen is monitored during test for 6mm x 150mm gaps, 25mm diameter gaps and flaming only.
- Less severe than AS1530.8.2
- Only suitable for FZ with more than 10m separation from vegetation

AS 1530.2 – Test for flammability of materials

- Called up by AS3959 for sarking and window seals
- Bench scale test intended for thin or woven materials that don't melt

New Buildings In Bushfire Prone Areas

Principle of Test Methods



AS 1530.1 – Combustibility test for Materials

- Called up by AS3959 where non combustible materials are required.
- Material “deemed non combustible” by the NCC are also acceptable.

AS 3837 – Test for Flammability of Timber Products

- Testing protocol reference by AS3959 Appendix F evaluating bushfire resistant timber.
- Requires two tests
- Materials that meet this criteria can be used where AS3959 requires “bushfire resistant timber”

New Buildings In Bushfire Prone Areas

What Does Compliance Documentation Look Like

Standard	Type of Construction Element	Type of Documentation to Expect
AS3959 Construction Requirements	All	<p>Highly variable</p> <ul style="list-style-type: none"> Some provide no guidance on product use and rely upon standard for limitations on use– very difficult for the rest of industry – buyers beware. Some provide a detailed specification of how their product or element needs to be installed to meet the AS3959 requirements– This helps everyone get it right
AS1530.8.1	Building element, eg wall, window, deck, roof	Laboratory Report – Includes a detailed specification of tested element and applicability of results of tested element included in report.
AS1530.8.2		
AS1530.4		
AS3837 Appendix F	Timber Product	Laboratory Report relating to tests undertaken to criteria. Applicability of results as per AS3959
AS1530.2	Material or Product	
AS1530.1	Material or Product	

New Buildings In Bushfire Prone Areas

What is needed next



Improved Deemed to satisfy Requirements

- Performance based approaches can be **expensive** and difficult to administer on project by project basis.
- The building product industry has gone along way to verify the performance of “standard building products and materials” by testing them.
- What is needed is funding of **development and Research** by into **improved AS3959 construction details** that deliver more cost effective solutions for building industry for everyone.

Thank you for your attention

