



BUSHFIRE SHUTTER.COM.AU

BAL-FZ BUSHFIRE SHUTTERS

TECHNICAL SPECIFICATIONS



Bushfire Attack Level (BAL)	Classified Vegetation within 100m of the site & Heat flux exposure thresholds	Description of predicted bushfire attack and levels of exposure
BAL—LOW	N/A	There is insufficient risk to warrant specific construction requirements
BAL—12.5	$\leq 12.5 \text{ kW/m}^2$	Ember attack
BAL—19	$> 12.5 \text{ kW/m}^2 - \leq 19 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux
BAL—29	$> 19 \text{ kW/m}^2 - \leq 29 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux
BAL—40	$> 29 \text{ kW/m}^2 - \leq 40 \text{ kW/m}^2$	Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux with the increased likelihood of exposure to flames
BAL—FZ	$> 40 \text{ kW/m}^2$	Direct exposure to flames from fire front in addition to heat flux and ember attack

BAL-FZ LEGAL REQUIREMENTS

UNDERSTANDING BUSHFIRE ATTACK LEVEL

Bushfire Attack level (BAL) is defined by Australian Standard AS3959-2009

‘Construction of buildings in bushfire-prone areas’ according to the theoretical radiant heat measured in kW/m^2 . BAL FZ is the most severe wherein the building could be directly exposed to flames from the fire front in addition to heat flux and ember attack in the event of a bushfire.

BAL-FZ LEGAL REQUIREMENTS

DEFINING A BAL-FZ BUSHFIRE SHUTTER

As per AS3959:2018 ‘Construction of buildings in bushfire-prone areas’ section 9.5.1 (Bushfire Shutters), Bushfire Shutters shall-

- Be fixed to the building and be non-removable
- When in closed position have no gap greater than 3mm between the shutter and the wall, the sill or the head
- Be readily manually operable from either inside or outside
- Protect the entire window assembly or door assembly
- Comply with AS 1530.8.2 when tested from the outside

If bushfire shutters are fitted to all external doors then at least one of those shutters shall be operable from the inside to facilitate safe egress from the building.



— BAL-FZ LEGAL REQUIREMENTS AS1530.8.2

The test prescribed for roller shutters in AS1530.8.2:2018 Methods for fire tests on building materials, components and structures, is a highly rigorous test to simulate exposure to direct flame impingement from a bushfire front.

BAL FZ bushfire shutters are exposed to a furnace for a 30 minute heating phase followed by a subsequent 60 minute period during which the performance of the element is monitored. The shutter during the heating phase is exposed to a furnace with large flaming sources and temperature controlled to reach 841°C after 30 minutes of heating which well exceeds Aluminium melting temperature.

— BAL-FZ TEST FAILURE CRITERIA

1) Formation of an opening from the fire-exposed face to the non-fire-exposed face of the element through which a 3 mm diameter probe can penetrate for the duration of the 90 min test period.

NOTE: Penetration is defined as a straight, unimpeded path through which a straight 3mm probe can pass through the specimen, freely and unobstructed, from the fire side to the non-fire side such that the tip of the probe is visible from the non-fire side.

2) Sustained flaming for more than 10 s on the non-fire side for the duration of the 90 min test period.

3) Flaming on the fire-exposed side at any time between 60 min and 90 min of the 90 min test period.

4) Where the specimen includes a protected opening, radiant heat flux exceeding 15 kW/m², 365 mm from the unexposed face of the specimen at any time in the 90 min test period.



BAL-FZ LEGAL REQUIREMENTS ROLLASHIELD CERTIFICATION

2.1 BAL FZ Design

Bushfireshutter.com.au's is made from roll formed 304 grade stainless steel interlocking slats that are fully insulated to prevent heat radiation passing through. The vertical guide rails, sill guide and pelmet box are protected by Colorbond Steel and have the full variety of colours available.

Bushfireshutter.com.au's RSBAL-82 Specifications and Capabilities:

- 5700mm Max width in single span
- 75mmx30mm vertical and sill guide tracks
- Fully motorised or manually operable
- Built-in (hidden) installations available
- Durable design for daily use to control light and temperature
- Fully insulated foam filled slats

— BAL-FZ LEGAL REQUIREMENTS CSIRO TEST

Performance observed in respect of Clause 14.4 of AS 1530.8.2-2018 criteria:

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 more than 10 seconds on the non-fire side for the duration of the 90 minute test period	No failure	-
Flaming on the fire-exposed side more than 30 minutes after completion of heating	No failure	-
Radiant heat flux 365-mm from the non-fire side exceeding 15-kW/m ²	No failure	-
Mean and maximum temperature rises greater than 140 K and 180 K	Not applicable	-
Radiant heat flux 250-mm from the specimen, greater than 3-kW/m ² more than 30 minutes after completion of the heating phase	No failure	-
Mean and maximum temperature of internal faces exceeding 250°C and 300°C respectively more than 30 minutes after completion of the heating phase	Not applicable	-

For the purpose of building regulations in Australia, the specimen achieved a Bushfire Attack Level of BAL: FZ.

This report details 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 AS 1530.8.2.

9 Tested by



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Testing Officer

