



**Kilargo**

dormakaba Group

# BUSHFIRE

Sealing Solutions for  
Door Assemblies in  
Bushfire Prone Areas



## Bushfire Door Sealing Systems Overview

After the significant bushfires in Canberra in 2003, the Australian Standard relating to building in bushfire prone areas was revised and a new Australian Standard (AS 3959) was drafted.

In the wake of the devastating Victorian bushfires in February 2009, this Standard was extensively reviewed, providing clearer guidance on the construction requirements for buildings in bushfire prone areas. The aim of the new building standard is to improve the ability of buildings to withstand a bushfire attack. This will provide greater protection for any occupants who may be sheltering in dwellings until the fire front passes, also increasing the chances of a building surviving a bushfire attack.

A great deal of scientific modelling has gone into the new building Standard AS3959-2009 (Construction of buildings in bushfire-prone areas). The chart below highlights the control data, which is defined as a Bushfire Attack Level (BAL). This determines the type of building construction required in bushfire prone areas in order to improve their resistance to bushfire attack from burning embers, radiant heat, or flames generated by a bushfire.

The BAL takes into consideration a number of factors including the Fire Danger Index, the slope of the land, types of surrounding vegetation and its proximity to any building.

The Fire Danger Index is a measure of the associated fire weather and the probability of a bushfire starting. It also includes its rate of spread, intensity and difficulty of suppression according to various combinations of temperature, relative humidity, wind speed and estimate of fuel state, all of which is influenced by daily rainfall and the time elapsed since the last rainfall.

Bushfire Attack Level (BAL)	Description of predicted bushfire attack and levels of exposure
<b>BAL-LOW</b>	The risk is considered to be VERY LOW. There is insufficient risk to warrant specific construction requirements.
<b>BAL-12.5</b>	The risk is considered to be LOW. There is a risk of ember attack.
<b>BAL-19</b>	The risk is considered to be MODERATE. There is a risk of ember attack and burning debris ignited by wind-borne embers and a likelihood of exposure to radiant heat.
<b>BAL-29</b>	The risk is considered to be HIGH. There is an increased risk of ember attack and burning debris ignited by wind-borne embers and a likelihood of exposure to an increased level of radiant heat.
<b>BAL-40</b>	The risk is considered to be VERY HIGH. There is a much increased risk of ember attack and burning debris ignited by wind-borne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front.
<b>BAL-FZ</b>	The risk is considered to be EXTREME. There is an extremely high risk of ember attack and burning debris ignited by wind-borne embers, and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.

## Bushfire Protection Levels / Minimum Seal Requirements as per AS3959 BAL Classifications

BAL (Bushfire Attack Level)	Vehicle Access Doors (Garage Doors)	Sliding Doors	Side-Hung External Doors, incl. French Doors, Panel-fold & Bi-fold Doors
<b>BAL-LOW</b>	AS3959 does not provide construction requirements for buildings assessed in bushfire-prone areas in accordance with Section 2 as being BAL-LOW.		
<b>BAL-12.5</b>	Panel-lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.	Sliding doors shall be tight-fitting in the frames and comply with AS3959 Clause 5.5.4	Doors shall be tight-fitting to the door frame and comply with AS3959 Clause 5.5.3. Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.
	Roller Doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.		
<b>BAL-19</b>	Panel-lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.	Sliding doors shall be tight-fitting in the frames and comply with AS3959 Clause 6.5.4	Doors shall be tight-fitting to the door frame and comply with AS3959 Clause 6.5.3. Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.
	Roller Doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.		
<b>BAL-29</b>	Panel-lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.	Sliding doors shall be tight-fitting in the frames and comply with AS3959 Clause 7.5.4	Doors shall be tight-fitting to the door frame and comply with AS3959 Clause 7.5.3. Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.
	Roller Doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.		
<b>BAL-40</b>	Panel-lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.	Sliding doors shall be tight-fitting in the frames. Seals shall be installed to stiles, head and sills or thresholds, and shall be manufactured from silicone rubber.	Doors shall be tight-fitting to the door frame and comply with AS3959 Clause 8.5.3. For side-hung external doors, weather excluders or draught seals shall be installed at the base. Seals to stiles, head and sills or thresholds shall be manufactured from silicone rubber.
	Roller Doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.		
<b>BAL-FZ</b>	Panel-lift, tilt doors or side-hung doors shall be fitted with suitable weather strips, draught excluders, draught seals or guide tracks, as appropriate to the door type, with a maximum gap no greater than 3mm.	All sliding doors shall be tight-fitting in the frame. Sliding door systems shall have an FRL of at least -/30/-, or comply with AS1530.8.2	Side-hung external doors, including French doors, panel-fold and bi-fold doors, shall have an FRL of at least -/30/-, or comply with AS1530.8.2
	Roller Doors shall have guide tracks with a maximum gap no greater than 3mm and shall be fitted with a nylon brush that is in contact with the door.		Doors shall be tight-fitting to the door frame, compliant with AS3959 Clause 9.5.3. Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors.
			Seals shall not compromise the FRL or the performance achieved in AS1530 Part 4.

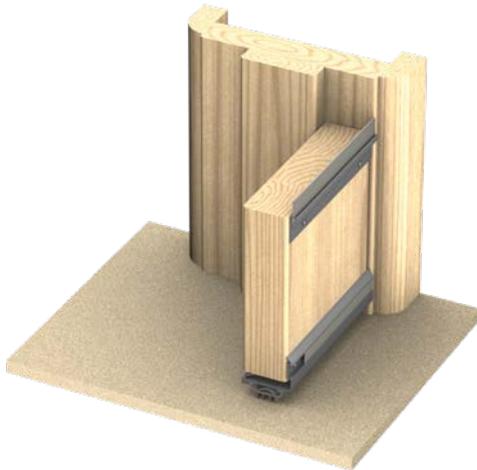
**Note:** The following solutions are given in good faith as guidance for varying applications in bushfire prone areas. Please consult the latest version of AS3959 for your specific compliance requirements under this Standard.

## Bushfire Attack Level: BAL 12.5 - 29



### IS5111si - IS3070si

External Aluminium Sliding Door



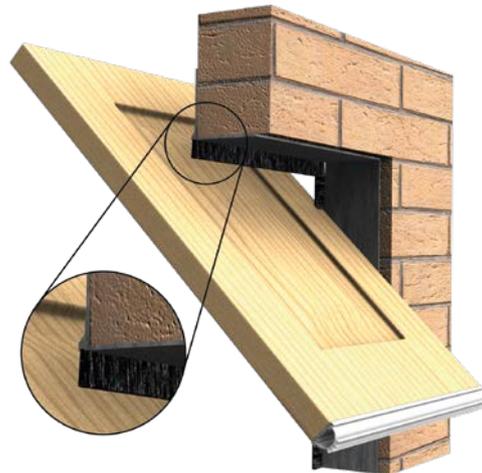
#### Door Thickness

Minimum 35mm thick solid core door

- This sealing combination is compliant with AS3959 as a suitable sealing solution for side-hung external doors in bush-fire risk areas.
- The door should be made from a non-combustible material (or otherwise compliant with the relevant BAL Standard clause) and be tight-fitting in its frame.
- Door frames shall be constructed from metal or a bush-fire resistant timber.

### IS5120 - IS3021si

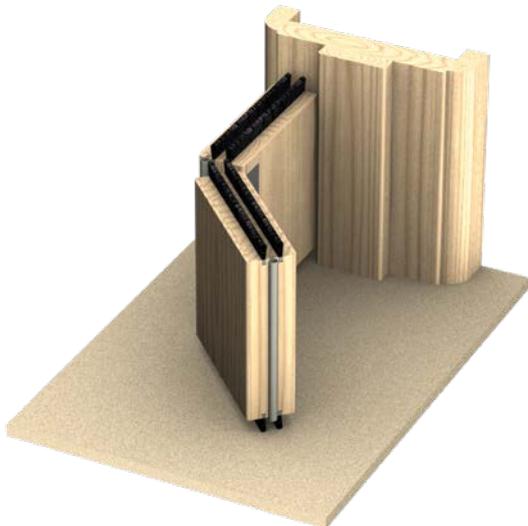
Panel Lift Garage Door



- This sealing combination is compliant with AS3959 as a suitable sealing solution for tilt-panel vehicle access doors (garage doors).
- The door should be made from a non-combustible material, bushfire-resistant timber or have a minimum 6mm fibre-cement sheet applied to the door material. The maximum gap around the door perimeter can be no greater than 3mm.

### IS5110B - IS1006si

Side-hung External Bi-Fold Door



#### Door Thickness

Minimum 35mm thick solid core door

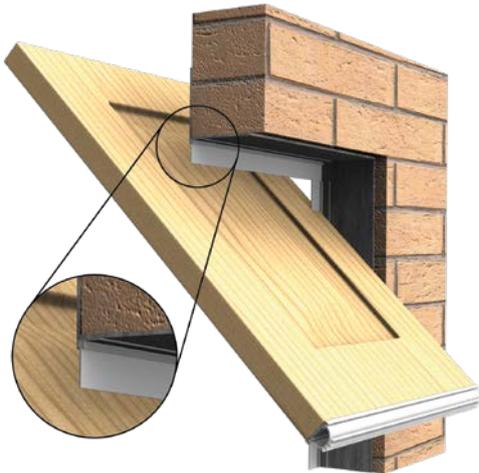
- This sealing combination is compliant with AS3959 as a suitable sealing solution for side-hung external bi-fold doors in bush-fire risk areas with a Bushfire Attack Level 29.
- The door should be made from a non-combustible material (or otherwise compliant with the relevant Standard AS3959 Part 7.5.3) and be tight-fitting in its frame.
- Door frames shall be constructed from metal or a bush-fire resisting timber. Where doors incorporate glazing, the glazing shall be toughened glass minimum 6mm thick.
- *Shutters or appropriate screens may also be required as per the relevant Standard requirements.*

## Bushfire Attack Level: BAL 40



### IS5161Hsi - IS3021si

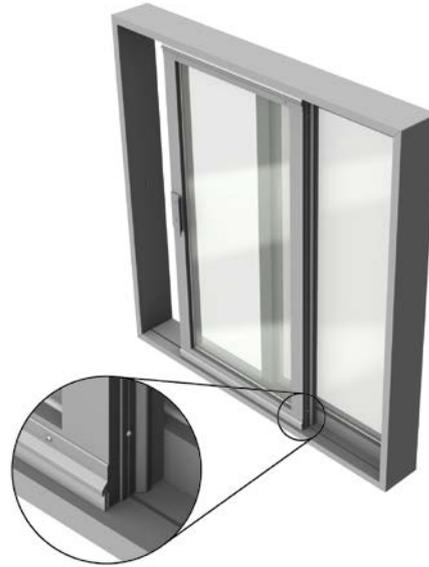
Panel Lift Garage Door



- This sealing combination is compliant with AS3959 as a suitable sealing solution for tilt-panel vehicle access doors (garage doors) with a Bush-fire Attack Level of 40.
- The door should be made from a non-combustible material. The maximum gap around the door perimeter can be no greater than 3mm.

### IS5111si

External Sliding Door



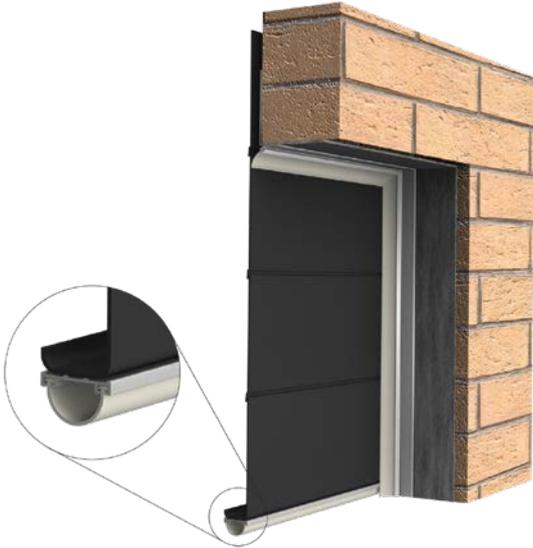
- This sealing combination is compliant with AS3959 as a suitable sealing solution for an external sliding door in a bush-fire risk area with a Bushfire Attack Level of 40.
- The door should be constructed so that it complies with AS3959 Part 8.5.4) and be tight-fitting in its frame.
- Both the sliding door frame and framing surrounding any glazing shall be metal. Where sliding doors incorporate any glazing, the glazing shall be toughened glass of minimum 6mm thick. Both the fixed and openable portions of the doors shall also be fitted with screens that comply with Clause 8.5.1A.
- The seals fitted to stiles, head and thresholds shall be manufactured from silicone or a material with a flammability index no greater than 5.

## Bushfire Attack Level: BAL FZ



### IS5176Asi - IS3020si

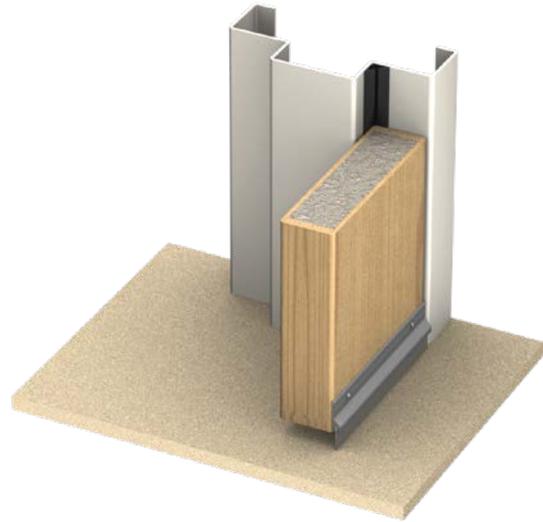
Roller Garage Door



- This sealing combination is compliant with AS3959 as a suitable sealing solution for metal roller vehicle access doors (garage doors) with a Bush-fire Attack Level FZ or less, providing effective resistance to ember attack.
- The door should be made from a non-combustible material and have roller guide tracks with a maximum gap no greater than 3mm.
- *Where the vehicle access garage is attached to the building, the requirements of AS3959 Clause 3.2.2(b) shall apply.*

### IS1212 - IS5111si

Hinged Entry Door - Fire Rated



- This sealing combination is compliant with AS3959 as a suitable sealing solution for side-hung external doors in bush-fire risk areas with a Bushfire Attack Level FZ classification or less.
- The door shall have an FRL of at least -/30/-, or comply with AS1530.8.2 (when tested from the outside).
- Doors shall be tight-fitting to the frame and the seals shall not compromise the FRL of the door assembly performance achieved under AS1530.4.



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