
FACT SHEET

NEW VICTORIAN BUSHFIRE STANDARD AS 3959-2009 Construction of buildings in bushfire-prone areas

Introduction

On 11 March 2009 the Victorian Government adopted the Australian Standard AS 3959-2009 *Construction of buildings in bushfire-prone areas* into a new residential building Standard to ensure that new Victorian homes are better protected in the event of a bushfire.

Victoria's implementation of the new Standard ahead of the other states will allow rebuilding after the February bushfires to be smarter and safer. The new Standard will be referenced in the *Building Code of Australia 2010* and come into effect on 1 May 2010.

While the Standard will improve protection for new homes, as well as alterations and additions, built in Victoria's bushfire-prone areas, it is important to note that it does not guarantee a building will survive a bushfire due to the unpredictable and often devastating nature of bushfires.

This fact sheet provides a summary of the Standard for plumbing practitioners.

About the Standard

The Standard covers all new buildings, alterations and additions in the State of Victoria and will see new and replacement homes designed, constructed and located with improved bushfire protection. Areas are defined under six Bushfire Attack Level (BAL) categories from low to extreme risk, as follows:

- BAL - LOW
- BAL - 12.5
- BAL - 19
- BAL - 29
- BAL - 40
- BAL - FZ (Flame Zone).

Every new home built or renovated in Victoria after 11 March 2009 must undergo a BAL assessment as part of the application for a building permit. The site BAL assessment determines the construction methods that must be used to better protect properties from the threat of bushfires.

A building surveyor will use the BAL to check compliance with the construction requirements of the Standard.

While the Standard is not regulated under plumbing regulations, the Plumbing Industry Commission encourages plumbing practitioners to ensure that they are aware of the six BAL categories and that their plumbing work meets the specific construction requirements.

More information

For more information about the new Standard and BAL categories, visit www.pic.vic.gov.au and download the publications *A guide to building in Victoria after the bushfires* and *A guide to assessing your property's Bushfire Attack Level* by clicking on "About Us", then "Bushfire Advice".

Plumbing practitioners are encouraged to purchase a copy of the Australian Standard *AS 3959-2009 Construction of buildings in bushfire-prone areas*. It can be obtained from [SAI Global](http://www.sai-global.com) or downloaded from Building Code of Australia on-line (www.bca.sai-global.com) if you have a current subscription.

Note:

The Standard does not provide construction requirements for buildings assessed in bushfire-prone areas as BAL-LOW as the risk does not warrant specific bushfire construction requirements.

For further information and assistance:

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Gutters and Downpipes

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	Gutter and valley leaf guards shall be non-combustible. Box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible material.	5.6.7
BAL 19	As above.	6.6.7
BAL 29	Gutter and valley leaf guards shall be non-combustible. With the exception of box gutters, gutters shall be metal or PVC-U. Box gutters shall be non-combustible and flashed at the junction with the roof, with non-combustible materials.	7.6.7
BAL 40	Gutter and valley leaf guards shall be non-combustible. Gutters shall be non-combustible. Box gutters shall be non-combustible and flashed at the junction with the roof with non-combustible materials.	8.6.7
BAL FZ	As above.	9.6.5

General Roof & Roofing Systems

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	(a) Roof tiles, roof sheets and roof-covering accessories shall be non-combustible. (b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and the underside of the roof and between the rafters at the line of the wall. (c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.	5.6.1
BAL 19	Points (a) to (c) above.	6.6.1
BAL 29	Points (a) to (c) above plus : (d) A pipe or conduit that penetrates the roof covering shall be non-combustible.	7.6.1
BAL 40	Points (a) to (d) above excluding aluminium in part (c). Roof-mounted evaporative coolers are excluded at this level.	8.6.1
BAL FZ	(a) The roof or roofing system shall be one of the following: (i) A system complying with AS 1530.8.2 when tested from the outside. or (ii) A system with an FRL of 30/30/30 or -/30/30 when tested from the outside. or (iii) A combination of Items (i) and (ii) above. (b) The roof/wall junction shall be sealed, to prevent openings greater than 3 mm, either by the use of fascia and eaves linings or by sealing between the top of the wall and	9.6.1



the underside of the roof and between the rafters at the line of the wall.

- (c) Roof ventilation openings, such as gable and roof vents, shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze, excluding aluminium.
- (d) Pipe or conduit that penetrates the roof covering shall be metal, excluding aluminium.

Roof-mounted evaporative coolers are excluded at this level.



Tiled Roofs

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	<p>Tiled roofs shall be fully sarked. The sarking shall—</p> <ul style="list-style-type: none"> (a) have a flammability index of not more than 5 when tested to AS 1530.2; (b) be located directly below the roof battens; (c) cover the entire roof area including the ridge; and (d) be installed so that there are no gaps that would allow the entry of embers where the sarking meets fascias, gutters, valleys and the like. <p>Note: Sarking should enter the gutter by minimum of 20mm</p>	5.6.2
BAL 19	<p>As per points (a) to (d) above</p> <p>Note: Sarking should enter the gutter by minimum of 20mm</p>	6.6.2
BAL 29	<p>Tiled roofs shall be fully sarked. The sarking shall—</p> <ul style="list-style-type: none"> (a) have a flammability index of not more than 5 when tested to AS 1530.2; (b) be located directly below the roof battens; (c) cover the entire roof area including the ridge; and (d) extend into gutters and valleys. <p>Note: Sarking should enter the gutter by minimum of 20mm</p>	7.6.2
BAL 40	<p>As per points (a) to (d) above</p> <p>Note: Sarking should enter the gutter by minimum of 20mm</p>	8.6.2
FZ	<p>(a) The roof or roofing system shall be one of the following:</p> <ul style="list-style-type: none"> (i) A system complying with AS 1530.8.2 when tested from the outside, or (ii) A system with an FRL of 30/30/30 or -/30/30 when tested from the outside, or (iii) A combination of Items (i) and (ii) above. 	

Sheet Roofs

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	<p>Sheet roofs shall—</p> <ul style="list-style-type: none"> (a) be fully sarked in accordance with Clause 5.6.2, except that foil-backed insulation blankets may be installed over the battens; <p style="text-align: center;">or</p> <ul style="list-style-type: none"> (b) have any gaps greater than 3 mm, under corrugations or ribs of sheet roofing and between roof components, sealed at the fascia or wall line and at valleys, hips and ridges by: <ul style="list-style-type: none"> (i) a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium; or (ii) mineral wool; or (iii) other non-combustible material; or (iv) a combination of any of Items (i), (ii) or (iii) above. 	5.6.3
BAL 19	As per points (a) to (b) above.	6.6.3
BAL 29	As per points (a) to (b) above.	7.6.3



BAL 40	As per points (a) to (b) above excluding aluminium.	8.6.3
FZ	(a) The roof or roofing system shall be one of the following: (i) A system complying with AS 1530.8.2 when tested from the outside, or (ii) A system with an FRL of 30/30/30 or –/30/30 when tested from the outside, or (iii) A combination of Items (i) and (ii) above	

Roof Penetrations

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	(a) Roof penetrations, including roof lights, roof ventilators, roof-mounted evaporative cooling units, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to seal the penetration shall be non-combustible. (b) Openings in vented roof lights, roof ventilators or vent pipes shall be fitted with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. (c) All overhead glazing shall be Grade A laminated safety glass complying with AS 1288. (d) Glazed elements in roof lights and skylights may be of polymer provided a Grade A safety glass diffuser, complying with AS 1288, is installed under the glazing. Where glazing is an insulating glazing unit (IGU), Grade A toughened safety glass, minimum 4 mm, shall be used in the outer pane of the IGU. (e) Flashing elements of tubular skylights may be of a fire-retardant material, provided the roof integrity is maintained by an under-flashing of a material having a flammability index no greater than 5. (f) Evaporative cooling units shall be fitted with butterfly closers at or near the ceiling level or, the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. (g) Vent pipes made from PVC are permitted.	5.6.5
BAL 19	As per points (a) to (f) above.	6.6.5
BAL 29	As per points (a) to (d) above plus: (e) Where roof lights are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium. (f) Evaporative cooling units shall be fitted with butterfly closers at or near the ceiling level, or the unit shall be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.	7.6.5
BAL 40	The following apply to roof penetrations: (a) Roof penetrations, including roof lights, roof ventilators, aerials, vent pipes and supports for solar collectors, shall be adequately sealed at the roof to prevent gaps greater than 3 mm. The material used to flash the penetration shall be non-combustible. (b) Glazed assemblies for roof lights and skylights shall have an FRL of –/30/–. (c) Where roof lights are installed in roofs having a pitch of less than 18 degrees to the horizontal, the glazing shall be protected with ember guards made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze. Note: aluminium is prohibited.	8.6.5



FZ	<p>(a) Roof penetrations, including roof lights, roof ventilators, aerials, vent pipes and supports for solar collectors, shall be adequately sealed with mineral fibre at the roof to prevent gaps. Where the gap between the roof covering and the roof penetration is greater than 3 mm, the material used to seal the penetration shall be non-combustible. NOTE: As a general principle, the service penetration should not significantly compromise the performance of the element of construction it penetrates nor should it be a means to allow the passage of burning embers or heat transfer such that fire may spread to the interior of the structure.</p> <p>(b) Roof lights and roof ventilators shall be one of the following:</p> <p>(i) A system complying with AS 1530.8.2 when tested from the outside.</p> <p>or</p> <p>(ii) A system with an FRL of 30/30/30 or -/30/30 when tested from the outside.</p>	9.6.3
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Eaves linings, fascias and gables

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	<p>The following apply to eaves linings, fascias and gables:</p> <p>(c) Eaves penetrations shall be protected the same as for roof penetrations, as specified in Clause 5.6.5.</p> <p>(d) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>Note: Ensure the ventilation provisions for gas appliances are sufficient.</p>	5.6.6
BAL 19	As above.	6.6.6
BAL 29	<p>(e) Eaves penetrations shall be protected the same as for roof penetrations (see Clause 7.6.5).</p> <p>(f) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel, bronze or aluminium.</p> <p>Note: Ensure the ventilation provisions for gas appliances are sufficient.</p>	7.6.6
Bal 40	As above excluding aluminium in part (f).	8.6.6
FZ	<p>(a) Joints in eave linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds.</p> <p>(b) Gables shall comply with Clause 9.4.</p> <p>(c) Fascias and bargeboards shall comply with AS 1530.8.2.</p> <p>(d) Eaves lining shall be:</p> <p>(i) a system with an FRL of -/30/30; or</p> <p>(ii) a system complying with AS 1530.8.2; or</p> <p>(iii) a combination if Items (i) and (ii) above.</p> <p>(e) Eaves penetrations shall be protected the same as for roof penetrations, as specified in Clause 9.6.3.</p> <p>(f) Eaves ventilation openings greater than 3 mm shall be fitted with ember guards made of non-combustible material or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant steel or bronze.</p>	9.6.4

Water and Gas Supply Pipes

Bushfire Attack Level	Summary of special construction requirement	Clause
BAL 12.5	Above-ground, exposed water and gas supply pipes shall be metal.	5.8
BAL 19	As above.	6.8
BAL 29	As above.	7.8
Bal 40	As above.	8.8
FZ	As above.	9.8





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