



BUSHFIRE RATED SYSTEMS



/ BUSHFIRE RATED SYSTEMS FOR BAL-40 ZONES



# AWS HAS DEVELOPED A WIDE RANGE OF BAL-40 RATED WINDOWS AND DOORS TO HELP COPE WITH THE DEVASTATION A BUSHFIRE CAN BRING.

In response to devastating bushfires, Australian Standard AS3959 has been updated and republished. AS3959-2018 is primarily concerned with improving the ability of buildings in designated bushfire-prone areas to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes) as well as to the building itself.

AWS has developed and tested an extensive range of Vantage®, Elevate™ and ThermalHEART™ aluminium windows and doors to meet and exceed NCC requirements for compliance under Australian Standard AS3959-2018 for windows and doors in a BAL-40 bushfire zone. These products are engineered and tested to withstand the conditions likely to occur in a BAL-40 zone and are designed to help you protect your home whilst still delivering unprecedented style, efficiency and functionality for your lifestyle.



/ Cover Photo & Above: Blue Mountains House - BAL-40. Designer: Distinct Innovations. Windows by Architectural Aluminium.

## BUSHFIRE RATED SYSTEMS

### BUSHFIRE ATTACK LEVELS (BAL)

<b>BAL-LOW</b>	Insufficient risk to warrant a construction response
<b>BAL-12.5</b>	Concern of ember attack
<b>BAL-19</b>	Increasing levels of ember attack and airborne burning debris. Increasing danger from radiant heat up to 19kw/m <sup>2</sup>
<b>BAL-29</b>	Greater risk of damage from airborne burning debris. Further risk from radiant heat exposure up to 29kw/m <sup>2</sup>
<b>BAL-40</b>	Burning debris ignited by windborne embers and radiant heat exposure up to 40kw/m <sup>2</sup> . Likelihood of direct flame contact
<b>BAL-FZ</b>	Direct flame contact from fire front & radiant heat exposure.



## AWS COMPLIANT SYSTEMS

AWS has developed and tested an extensive range of Vantage®, Elevate™ and ThermalHEART™ aluminium windows and doors to meet and exceed NCC requirements for compliance under Australian Standard AS3959-2018 for windows and doors in a BAL-40 bushfire zone. The following AWS window systems will comply with these requirements.

### BAL-40 TESTED/CERTIFIED WINDOWS

Series 452 Commercial Sliding Window  
 Series 453 Commercial Double Hung Window  
 Series 456 Commercial Awning Window  
 Series 461 Apartment Sliding Window  
 Series 462 Architectural Sliding Window  
 Series 463 Architectural Double Hung Window  
 Series 466 Awning Window  
 Series 502, 504, 506 Sliding Window  
 Series 514 Double Hung Window  
 Series 516 Awning Window

Series 516 Fixed Window  
 Series 517 Awning Window  
 Series 517 Fixed Window  
 Series 602 Sliding Window  
 Series 613 Double Hung Window  
 Series 616 Awning Window  
 Series 616 Fixed Window  
 Series 726 Awning Window  
 Series 726 Fixed Window

### BAL-40 TESTED/CERTIFIED DOORS

Series 542 D'Stacker™ Sliding Door  
 Series 549 Entry Door  
 Series 548 French Doors  
 Series 548 Bi-fold Doors  
 Series 618 Sliding Door  
 Series 729 Hinged Door  
 Series 730 Bi-fold Door  
 Series 731 Sliding Door  
 Series 50 Commercial Door (Hinged Door)  
 Series 52 Commercial Door

Series 442 Commercial D'Stacker Door  
 Series 471 Apartment Sliding Door  
 Series 642 Commercial D'Stacker Door  
 Series 410 FoldMASTER™ Bi-fold (Bottom Rolling)  
 Series 411 ViewMASTER™ Bi-fold (Top Hung)  
 Series 412 FoldMaster™ Bi-fold (Bottom Rolling)  
 Series 650 Architectural Hinged Door  
 Series 704B Sliding Door  
 Series 704T Sliding Door  
 Series 704R Sliding Door

### BAL-40 TESTED/CERTIFIED COMMERCIAL FRAMING

Series 400 CentreGLAZE™ SG (102mm)  
 Series 424 CentreGLAZE™ DG (102mm)  
 Series 624 CentreGLAZE™ DG (150mm)  
 Series 406 FrontGLAZE™ SG (102mm)  
 Series 606 FrontGLAZE™ SG (150mm)  
 Series 426 FrontGLAZE™ DG (102mm)  
 Series 626 FrontGLAZE™ DG (150mm)

Series 600 Wide Offset (150mm)  
 Series 804 Thermally Broken CentreGLAZE™ (100mm)  
 Series 806 Thermally Broken CentreGLAZE™ (150mm)  
 Series 824 Thermally Broken FrontGLAZE™ (100mm)  
 Series 826 Thermally Broken FrontGLAZE™ (150mm)  
 Series 852 Thermally Broken Commercial Door

NOTE: AWS systems are also suitable for use in BAL-12.5 and BAL-29. Compliance with requirements for BAL may limit your glass options, contact an AWS fabricator to discuss your specific requirements. Maximum tested glass size for BAL-40 windows or doors is 4.5m<sup>2</sup> for single glazed and 4.5m<sup>2</sup> for double glazed.





Blue Mountains House. Designer: Distinct Innovations. Windows by Architectural Aluminium.

## PRODUCT IDENTIFICATION

Throughout AWS brochures, websites and literature, window and door systems which have been or certified to comply with AS3959-2018 are identified with the BAL-40 logo illustrated below.

Testing undertaken is in accordance with AS 1530.8.1 and the certification is issued based upon a positive outcome to this testing procedure.

Products which comply with requirements for BAL-40 are suitable for use in BAL-12.5 and BAL-29.



## PRODUCT LABELLING

All AWS windows supplied as compliant for BAL-40 bushfire zones will be identified with the following adhesive label:



## BAL-40 RATED PRODUCT

This product has been tested - certified to comply with BCA requirements for windows in BAL-40 Bush fire zones. Should this product or its components require repair or replacement contact ARCHITECTURAL WINDOW SYSTEMS to maintain compliance.  
techsupport@awsaustralia.com.au

## PRODUCT SPECIFICATION

When specifying AWS window and door systems for BAL-40 bushfire applications, please make your fabricator aware of this requirement as specific glass, mohair, seals, hardware and components are required during manufacture to ensure compliance.

Compliance with BAL may limit your glass options, your fabricator will assist you in selecting a suitable glass type to meet your energy and BAL requirements.

Maximum tested glass size for BAL-40 windows or doors is 4.5m<sup>2</sup> for single glazed and 4.5m<sup>2</sup> for double glazed.

## SCREENS

AWS BAL-40 rated door systems have been successfully tested to comply with relevant Australian Standards without the use of screens.

Screens must be fitted to the operable portion of all BAL-40 rated windows.

Any accredited BAL-40 rated screen can be fitted to AWS window systems in accordance with Australian Standard.

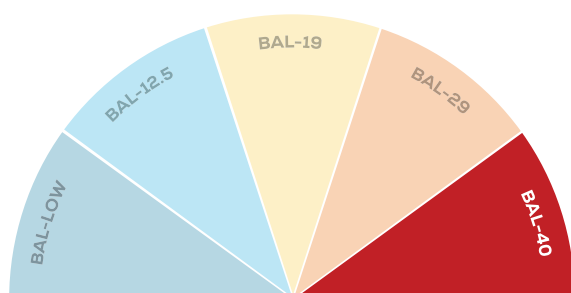
Approved fire rated screens in accordance with Australian Standard are required on all opening portions of windows.

## BUSHFIRE ATTACK LEVELS

In the Australian Standard AS3959, they have classified different bushfire intensity levels that a home may experience during a bushfire. These are referred to as Bushfire Attack Levels, or BALs for short.

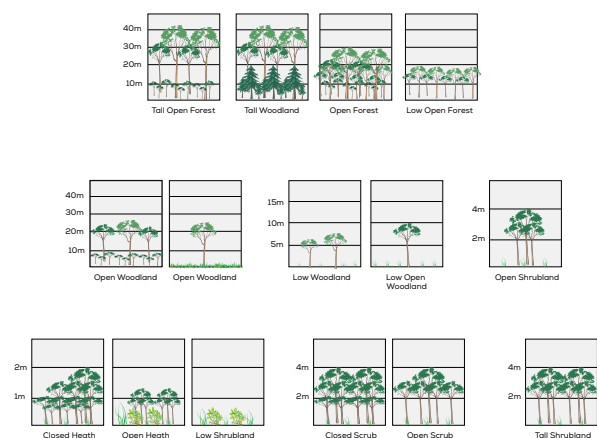
There are six bushfire attack levels in total:

- » BAL-FZ Flame Zone
- » BAL-40
- » BAL-29
- » BAL-19
- » BAL-12.5
- » BAL-Low

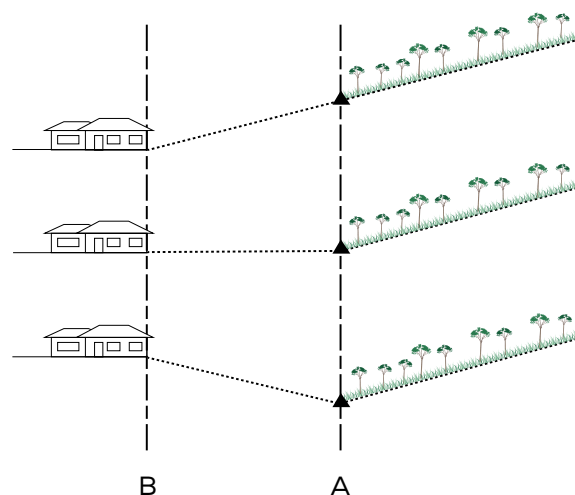


These individual levels are based on:

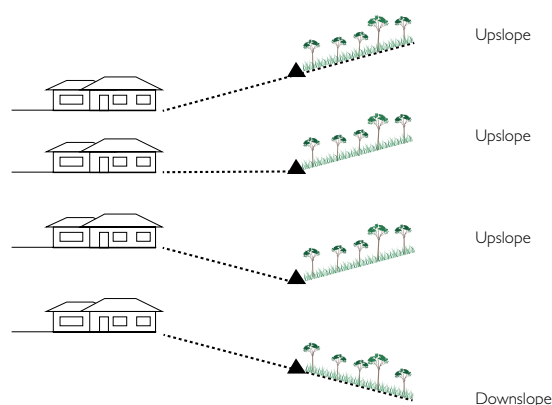
1. The region where you live.
2. The vegetation type around your property.
3. The distance from your home to individual vegetation types.
4. Slope on the property



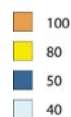
## DISTANCE FROM VEGETATION



## EFFECTIVE SLOPE

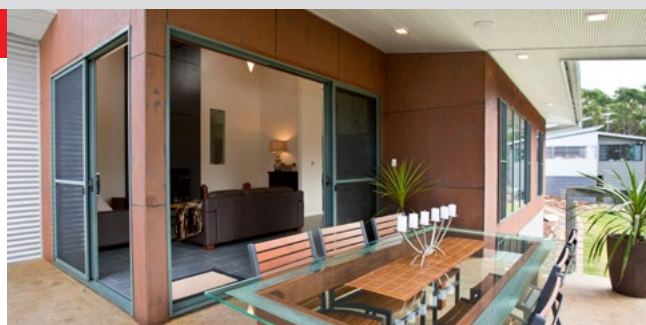


## FIRE DANGER INDEX



## BAL-LOW

Standard window and door products may be used at this level. There are no special requirements.



## BAL-12.5

## WINDOWS

- » Standard windows must be completely protected by bushfire shutters complying with AS3959-2018 clause 3.7 and clause 5.5.1

OR

- » A tested window system must be used compliant with AS1530.8.1 2007, operable portion of the window must be screened internally or externally with metal screens with an aperture of 2mm made from corrosion resistant steel, bronze or aluminum

OR

- » The following deem-to-satisfy approach can be used
  - All openings must be screened internally or externally with metal screens with a maximum aperture of 2mm made from corrosion resistant steel, bronze or aluminium.
  - Where glazing is less than 400mm from the ground or other structures (decks etc) and less than 18 degrees to the horizontal, Grade A safety glass minimum 4mm must be used.
  - If windows incorporate glazing within 400mm to the ground, they must be manufactured from:
    - a. Bushfire resistant timber (Appendix F).
    - b. Timber species as listed in Appendix E.
    - c. Metal / Aluminium.
    - d. uPVC with reinforced corrosion resistant steel.
  - Externally fitted hardware that supports the sash in its function must be metal.

## SIDE-HUNG EXTERNAL DOORS &amp; SLIDING DOORS

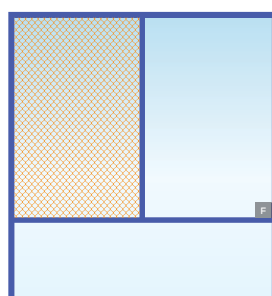
- » Standard hinged and sliding doors must be completely protected by bushfire shutters compliant to AS3959-2018 clause 3.7 and clause 5.5.1

OR

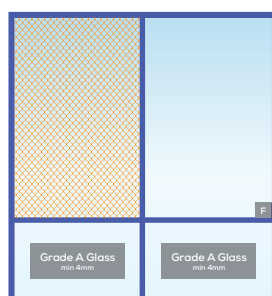
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door

OR

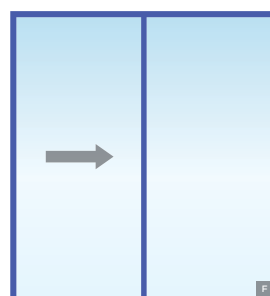
- » The following deem-to-satisfy approach can be used
  - Where glazing is incorporated glass shall be Grade A safety in accordance with AS1288 -2006.
  - Side-hung doors require draught excluders installed at the sill. Sliding doors to have tight fitting seals.
  - No requirement to screen the operable portion of a sliding door.
  - Where any part of the door assembly is within 400mm to the ground or other structures (decks), and less than 18 degrees to the horizontal, door frames must be made from
    - a. Bushfire resistant timber (Appendix F).
    - b. Timber species as listed in Appendix E.
    - c. Metal / Aluminium.
    - d. uPVC with reinforced corrosion resistant steel.



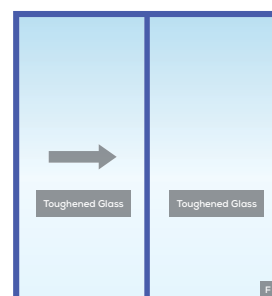
TESTED SYSTEM



DEEM-TO-SATISFY



TESTED SYSTEM



DEEM-TO-SATISFY

## BAL-19

## WINDOWS

- » Standard windows must be completely protected by bushfire shutters complying with AS3959-2018 clause 6.5.1 and clause 3.7

OR

- » A tested window system must be used compliant with AS1530.8.1 2007, operable portion of the window must be screened internally or externally with metal screens with a maximum aperture of 2mm made from corrosion resistant steel, bronze or aluminium

OR

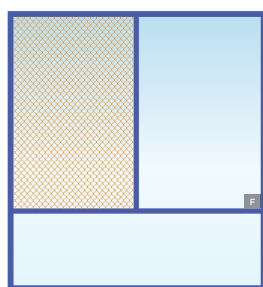
- » The following deem-to-satisfy approach can be used
  - Where annealed glass is used, fixed and operable portions must be screened externally.
  - Where toughened glass is used minimum is 5mm and openings must be screened internally or externally made from corrosion resistant steel, bronze or aluminium.
  - Where glazing is less than 400mm from the ground or other structures (decks etc) and less than 18 degrees to the horizontal and more than 110mm in width, 5mm toughened glass must be used.
  - Externally fitted hardware that supports the sash in its function must be metal.
  - If window assemblies are within 400mm to the ground or other structures and less than 18 degrees to the horizontal, they must be manufactured from:
    - a. Bushfire resistant timber (Appendix F).
    - b. Timber species as listed in Appendix E.
    - c. Metal / Aluminium.
    - d. uPVC with reinforced corrosion resistant steel.

a. Bushfire resistant timber (Appendix F).

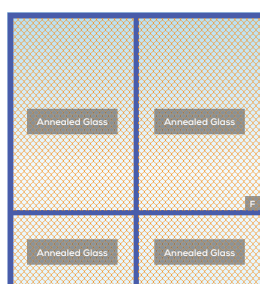
b. Timber species as listed in Appendix E.

c. Metal / Aluminium.

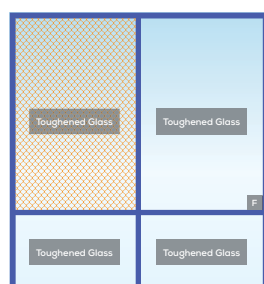
d. uPVC with reinforced corrosion resistant steel.



TESTED SYSTEM



DEEM-TO-SATISFY



DEEM-TO-SATISFY

## SIDE-HUNG EXTERNAL DOORS &amp; SLIDING DOORS

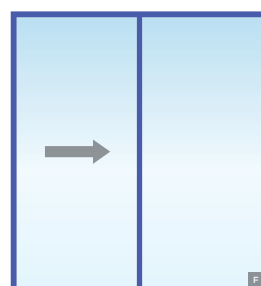
- » Standard hinged and sliding doors must be completely protected by bushfire shutters complying with AS3959-2018 clause 3.7 and clause 6.5.1

OR

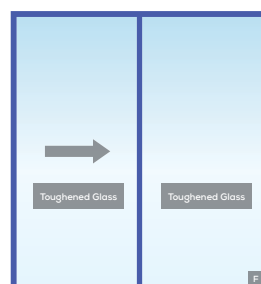
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door

OR

- » The following deem-to-satisfy approach can be used
  - Where doors incorporate glazing, the glass must be toughened 5mm minimum.
  - Where any part of the door assembly is within 400mm to the ground or other structures (decks) and less than 18 degrees to the horizontal, door frames must be manufactured from:
    - a. Bushfire resistant timber (Appendix F).
    - b. Timber species as listed in Appendix E.
    - c. Metal / Aluminium.
    - d. uPVC with reinforced corrosion resistant steel.
  - Side-hung doors require draught excluders installed at the sill. Sliding doors to have tight fitting seals.
  - No requirement to screen the operable portion of a sliding or hinged door.



TESTED SYSTEM



DEEM-TO-SATISFY





/ Blu Eco Homes. Architect: Ross Young Architects. Windows: Evolution Windows.

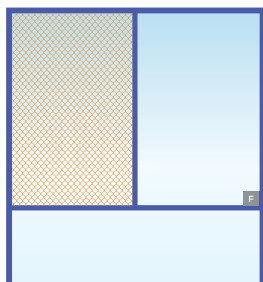
## BAL-29

## WINDOWS

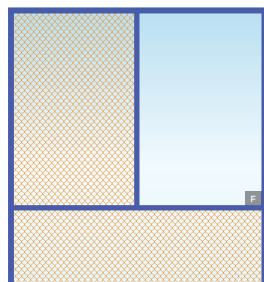
- » Standard windows must be completely protected by shutters complying with AS3959-2018 clause 3.7 and clause 7.5.1
- OR
- » A tested window system must be used compliant with AS1530.8.1 2007, operable portion of the window must be screened internally or externally with metal screens with a maximum aperture of 2mm made from corrosion resistant steel, bronze or aluminium

OR

- » The following deem-to-satisfy approach can be used
  - *Window assemblies must be manufactured from:*
    - a. Bushfire resistant timber (Appendix F).
    - b. Metal / Aluminium.
    - c. uPVC with reinforced corrosion resistant steel.
  - *Glazing must be a minimum of 5mm toughened glass.*
  - *Where glazing is less than 400mm from the ground or other structures (decks etc) and less than 18 degrees to the horizontal extending more than 110mm in width, that portion must be screened.*
  - *Externally fitted hardware that supports the sash in its function must be metal.*
  - *The operable portion and low light area must be screened with a mesh with a maximum aperture of 2mm, made from a corrosion resistant steel, bronze or aluminium.*



TESTED SYSTEM



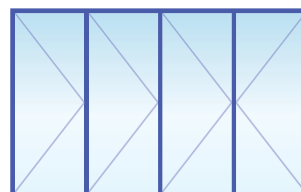
DEEM-TO-SATISFY

## SIDE-HUNG EXTERNAL DOORS

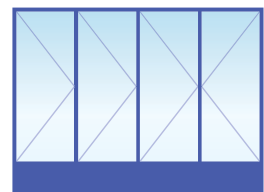
- » Standard hinged doors must be completely protected by shutters complying with AS3959-2018 clause 3.7 and clause 7.5.1
- OR
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door

OR

- » The following deem-to-satisfy approach can be used
  - *Where doors incorporate glazing, the glass must be toughened 6mm minimum.*
  - *Externally fitted hardware that supports the panel in its function must be metal.*
  - *Where any part of the door assembly is within 400mm to the ground or other structures (decks) and less than 18 degrees to the horizontal and extending more than 110mm in width, that area must be screened or covered with a perforated sheet.*
  - *Door frames must be made from:*
    - a. Bushfire resistant timber (Appendix F)
    - b. Metal / Aluminium.
    - c. uPVC with reinforced corrosion resistant steel.
  - *Side-hung doors require draught excluders installed at sill.*



TESTED SYSTEM



DEEM-TO-SATISFY



## SLIDING DOORS

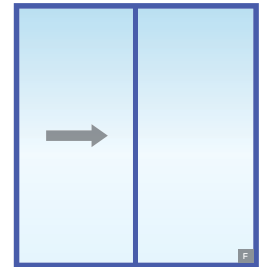
- » Standard sliding doors must be completely protected by bushfire shutters complying with AS3959-2018 clause 3.7 and clause 7.5.1 or completely screened with a mesh having a maximum aperture of 2mm, made from corrosion resistant steel, bronze or aluminium.

OR

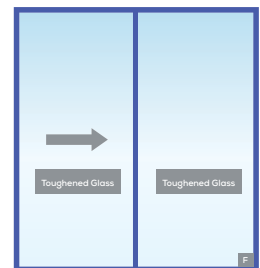
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door:

OR

- » The following deem-to-satisfy approach can be used
  - *Where doors incorporate glazing, the glass must be toughened 6mm minimum.*
  - *With 6mm toughened glass, screening is not required.*
  - *Externally fitted hardware that supports the panel in its function must be metal.*
  - *Door frames must be made from:*
    - a. *Bushfire resistant timber (Appendix F)*
    - b. *Metal / Aluminium.*
  - *Sliding doors shall be tight fitting in frames*



TESTED SYSTEM



DEEM-TO-SATISFY



## BAL-40

## WINDOWS

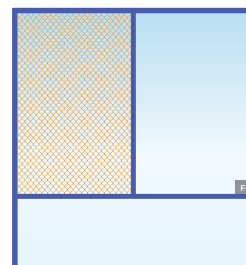
- » Standard windows must be completely protected by shutters complying with AS3959-2018 clause 3.7 and clause 8.5.1

OR

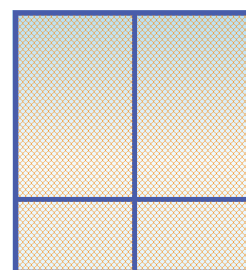
- » A tested window system compliant with AS1530.8.1 2007 must be used and the operable portion of the window must be screened internally or externally with metal screens with a maximum aperture of 2mm made from corrosion resistant steel or bronze.

OR

- » The following deem-to-satisfy approach can be used
  - *Window frames and hardware shall be metal (includes aluminium)*
  - *Glazing must be a minimum of 6mm toughened glass.*
  - *Both the operable and fixed portions must be screened with a mesh with a maximum aperture of 2mm, made from a corrosion resistant steel or bronze.*
  - *Seals to stiles, head and sills shall be manufactured from materials with a flammability index no greater than 5 or made from silicone.*



TESTED SYSTEM



DEEM-TO-SATISFY

## SIDE-HUNG EXTERNAL DOORS

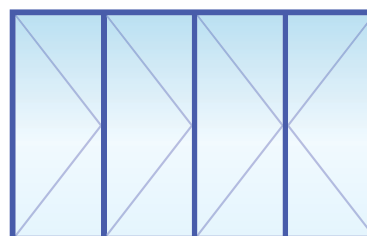
- » Standard hinged doors must be completely protected by bushfire shutters complying with AS3959-2018 clause 8.5.1

OR

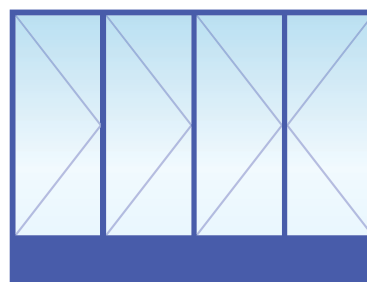
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door

OR

- » The following deem-to-satisfy approach can be used
  - *Doors frames must be made from metal (including aluminium)*
  - *Doors to be a minimum thickness of 35mm*
  - *Where doors incorporate glazing, the glass must be toughened 6mm minimum.*
  - *Externally fitted hardware that supports the panel in its function must be metal.*
  - *Where any part of the door assembly is within 400mm to the ground or other structures (decks) and less than 18 degrees to the horizontal and extending more than 110mm in width, that area must be screened/covered with a perforated sheet.*
  - *Seals to stiles, head and sills shall be manufactured from materials with a flammability index no greater than 5 or made from silicone.*
  - *Side-hung doors require draught excluders installed at sill.*



TESTED SYSTEM



DEEM-TO-SATISFY

## SLIDING DOORS

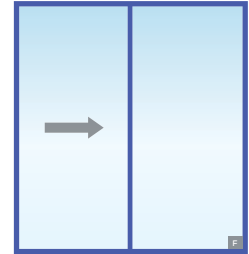
- » Standard sliding doors must be completely protected by bushfire shutters complying with AS3959-2018 clause 8.5.1.

OR

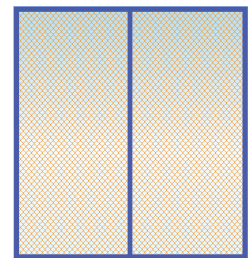
- » A tested door system must be used compliant with AS1530.8.1 2007, there is no requirement to screen the operable part of the door

OR

- » The following deem-to-satisfy approach can be used
  - *Where doors incorporate glazing, the glass must be toughened 6mm minimum.*
  - *With 6mm toughened glass, screening is still required to both operable and fixed portions.*
  - *Externally fitted hardware that supports the panel in its function must be metal.*
  - *Seals to stiles, head and sills shall be manufactured from materials with a flammability index no greater than 5 or made from silicon*
  - *Sliding doors shall be tight fitting in frames.*



TESTED SYSTEM



DEEM-TO-SATISFY

## BAL-FZ

- » 9.5.1 – Where fitted, bushfire shutters shall comply with AS1530.8.2
- » 9.5.2 – Windows shall be completely protected by bushfire shutters or have an FRL of -/30/- or comply with AS1530.8.2
- » 9.5.3 – Side-hung doors shall be completely protected by bushfire shutters or have an FRL of -/30/- or comply with AS1530.8.2
- » 9.5.4 – Sliding doors shall be completely protected by bushfire shutters or have an FRL of -/30/- or comply with AS1530.8.2





**ABN 48 067 950 903**  
awsaustralia.com.au  
specifyaws.com.au

FOR TECHNICAL SUPPORT & FABRICATOR LOCATIONS  
**CALL 1300 026 189**  
or email [marketing@awsaustralia.com.au](mailto:marketing@awsaustralia.com.au)

**HEAD OFFICE**  
76-78 Jemma Road Prestons NSW 2170  
PO BOX 311 Liverpool NSW 1871, Australia

v2.05 December 2020