

AGWA Guide Series

COMPLIANCE GUIDE

AN OVERVIEW OF REQUIREMENTS OF THE 2022 NATIONAL
CONSTRUCTION CODE FOR:

- ✓ Windows and external glazed doors
- ✓ Glass balustrades
- ✓ Glass pool fences
- ✓ Shower screens



AUSTRALIAN
**GLASS &
WINDOW**
ASSOCIATION

INTRODUCTION

As part of its commitment to raising the workmanship and built performance standard of windows and doors in Australia, the Australian Glass and Window Association (AGWA) is pleased to provide this Industry Guide for the Assessment of Compliance of Windows and Doors.

AGWA is the peak body for the Australian glass and window industry, made up of over 1000 Glass Processors, Glaziers, Window Manufacturers and Industry Suppliers throughout Australia and overseas. Members of the Association have products tested to Australian Standard AS 2047 Windows and external glazed doors in buildings and glass products in accordance with AS 1288 Glass in Buildings; as well as other relevant Australia Standards referred to in this Guide. When purchasing from an AGWA member, buyers can be confident that the products are made to withstand Australian conditions. Non-compliant products may not be suited to Australian conditions.

AGWA ACCREDITED

The Australian Glass and Window Association is a NATA Accredited Inspection Agency and undertakes annual audits of compliance to provide members with the means to independently demonstrate product performance and compliance with relevant Australian Standards.

The AGWA Accredited Company Program provides a comprehensive framework to develop and demonstrate the skills, experience and integrity of member company's production systems.



Compliance

Provide Accredited Companies with the means to independently demonstrate product performance and compliance with the National Construction Code, Australian Standard 2047 Windows and external glazed doors in buildings, Australian Standard 1288 Glass in buildings and other relevant Australian Standards.



Skills and Training

Ensure Accredited Companies have the technical 'know-how' to achieve consistent and reliable performance and provide a continuing professional development program that allows Accredited Companies to maintain the currency of their skills and improve competency within their workforce.



Safety

Assist Accredited Companies in providing a safe and healthy workplace for all employees and recognise best practice WHS management and employee engagement in promoting safety and well-being in the workplace.



For more information

If you would like to learn more about AGWA Accredited Companies Program, please email admin@agwa.com.au or call (02) 9498 2768 and one of our staff will answer any questions you might have.

To promote the highest quality standards, AGWA Accredited Companies Program is independently administered and conducted without bias. AGWA is a NATA Accredited Inspection Agency and operates its Accredited Company Program in accordance with AS/ISO 17020

The Australian Glass and Window Association (AGWA) is the peak association representing over 1,000 member companies covering window manufacturers, glass processors, merchants, glaziers and suppliers of supporting machinery, services and materials. We endorse compliant, sustainable and fit-for-purpose products and provide services to members that support their efforts to operate successfully.

COMPLIANCE GUIDE OBJECTIVE

This Compliance Guide outlines the basic information that needs to be gathered and considered for assessing the suitability, compliance, and fitness for purpose of window and door products, glass barriers, glass pool fences and showerscreens for building projects and is intended to be used as a quick reference guide for certifiers and other professionals to ensure compliance with the National Construction Code (NCC).*

* subject to state and territory variations

HOW TO USE THIS GUIDE

This guide is divided into five parts:

- Windows and Doors for Class 1&10 buildings (housing)
- Windows and Doors for Class 2 to 9 buildings
- Glass Barriers (Balustrades)
- Glass Pool Fences
- Showerscreens

Requirements are arranged by Performance Requirement as prescribed by the NCC. Guidance is provided under each section, outlining specific product attributes, relevant to each product, that should be inspected or assessed to confirm conformance and key assessment criteria.

The orange panel at the top of each page outlines specific information relevant to each Performance Requirement, as follows:

- Objective
- Application
- DTS clauses
- Primary referenced standards
- Other standards

Below this, guidance is provided for each of the following categories:



Visual Inspections



Documentation



**Key Assessment
Criteria**



AGWA Resources

GENERAL

Governing Requirement

A5G3 Evidence of Suitability

Objective:

Evidence needed to show that the NCC requirements are met and solution is “fit for purpose”.
 Examples of appropriate forms of evidence are listed against each Performance Requirement in the following sections, however general requirements are as follows:

Application:

- Windows and external glazed doors
- Glass Barriers (Balustrades)
- Glass Pool Fences
- Showerscreens

Visual Inspections Items should be sighted for applicability to evidence provided



Documentation Appropriate documentation should be supplied which adequately substantiates relevant performance attributes. These may include:



- Test Reports,
- Engineering assessment,
- Technical Manuals,



Key Assessment Criteria

Relevance of evidence to project:

- product details and descriptors match those on-site
- site specific attributes such as wind-loads, bushfire & energy ratings are clearly defined
- specific locations of the products match those shown on the plans.



Competence & expertise of certifying person:

- assessment of individual and organisation competence & capacity to make declarations of conformity*

*AGWA recommends evidence of industry specific accreditation and/or independent third-party conformity assessment be provided to support claims.

AGWA Resources AGWA Accredited Brochure



WINDOWS AND DOORS FOR CLASS 1 & 10 BUILDINGS (HOUSING)

Performance Requirement

H1P1 Structural reliability and resistance
H2P2 Weatherproofing

Objective:

Windows and glazing are capable of resisting appropriate wind-actions. Glazing subject to human impact avoids undue risk of injury to people.

Application:

All external windows and glazed doors

DTS Clauses:

H1D8, H2D7, HP Section 8

Primary Referenced Standard:

AS 4055 Windloads for housing
 AS/NZS 1170.2 Structural Design actions - Part 2 Wind actions
 AS 2047 Windows and external glazed doors in buildings
 AS 1288 Glass in buildings

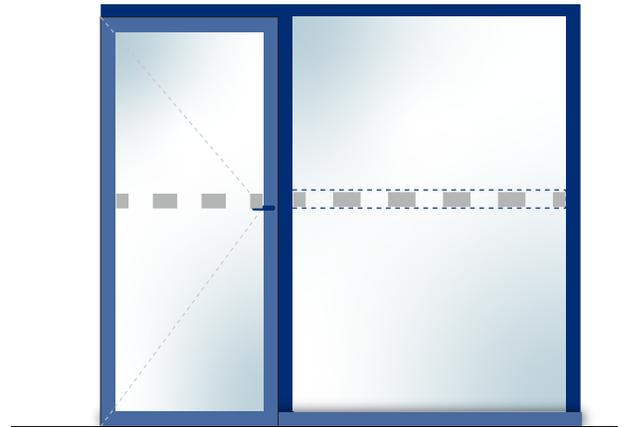
Other Standard:

AS 4420.1 Windows, external glazed, timber and composite doors - Methods of test
 AS 2208 Safety glazing materials in buildings
 AS/NZS 4284 Testing of building facades
 AS 4666 Insulating glass units
 AS/NZS 4667 Quality requirements for cut-to-size and processed glass

Visual Inspections Window Labels

Safety Glass Labels

Manifestation (Decals / Motifs / Visual Indicators)



Documentation

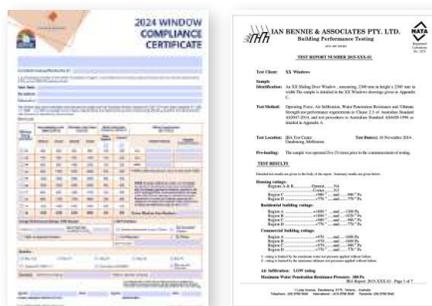
Compliance Certificate / Declaration of Conformity,

NATA accredited AS 2047 test reports,

Manufacturer technical manuals,

Engineers Reports

Manufacturer certificate of accreditation



Key Assessment Criteria



Wind Loads

Verification that type testing of the window or door system demonstrates it meets (or exceeds) the Serviceability Limit State (SLS), Ultimate Limit State (ULS) wind pressures and Water Penetration Resistance (WPR) required by AS 2047 as nominated by the building designer, including:

- Corner pressures, and
- Exposed / Non-Exposed WPR

Glass selection is in accordance with AS 1288

Product Size & Configuration

Check that the test report supports the relevant product size (overall height and width), size of any operating sashes and sectional properties of load-bearing elements (mullions and transoms).

- note AS 2047 permits a maximum of 10% extrapolation in height or width (or 15% in total area)
- engineers report required for larger product configurations or more complex extrapolation (in-house engineering permissible)

Glass Type & Thickness for Human Impact

Establish that glazing is Grade A safety glass in accordance with AS 1288 for areas subject to human impact, such as doors, sidelights, stair and landings, kitchens & bathrooms

Wind Classification	Serviceability Limit State (SLS) Pressure Pa		Ultimate Limit State (SLS) Pressure Pa		Water Penetration Resistance (WPR) Pressure Pa	
	General	Corner	General	Corner	Non-Exposed	Exposed
N1	400	600	600	900	150	200
N2	400	600	900	1300	150	200
N3	600	800	1400	2000	150	300
N4	800	1200	2000	3000	200	300
N5	1200	1800	3000	4500	300	450
N6	1600	2500	4000	6000	450	600
C1	600	800	1800	2700	150	300
C2	800	1200	2700	4000	200	300
C3	1200	1800	4000	5900	300	450
C4	1600	2500	5300	8000	450	600

AS 1288 Grade A Safety Glass - Maximum Areas (4-edge support)

Glass Type	Glass Thickness					
	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm 12 mm
Toughened & Toughened Laminate	1.0 m ²	*2.2 m ²	3.0 m ²	4.0 m ²	6.0 m ²	10.0 m ²
Laminated & Heat-Strengthened Laminate	-	-	2.2 m ²	3.0 m ²	5.0 m ²	9.0 m ²
Safety Organic-Coated Glass	2.0 m ²	2.0 m ²	2.2 m ²	3.0 m ²	5.0 m ²	9.0 m ²
Organic-Backed Safety Mirror	-	3.0 m ²	3.5 m ²	4.0 m ²	-	-

* Housing Provision Table 8.4.2 limits 4 mm toughened to 2.0 m²

AGWA Resources



- A Guide to Window and Door Selection
- A Guide to Glass and Glazing
- AGWA TFS Windloads for Housing
- AGWA TFS Corner Windows
- AGWA TFS Exposed Sites
- AGWA TFS Manifestation
- AGWA TFS Safety Glass Labelling
- AGWA TFS Water Penetration Resistance
- AGWA TFS Glass in buildings
- AGWA TFS Weatherproofing Of Buildings NCC Requirements



Performance Requirement

HSP2 Fall prevention barriers

Objective:

Prevention of falls (for children) through openable windows

Application:

Openable windows within 1.7 m of FFL protecting a height greater than:

- 2m in bedrooms
- 4m in all other cases

DTS Clauses:

D3D29

Primary Referenced Standard:

None

Other Standard:

AS 5203 Protection of openable windows fall prevention - Test sequence and compliance method

Visual Inspections Where required:

- windows are restricted, or
- safety/security screens fitted



Documentation

Compliance Certificate / Declaration of Conformity

AS 5203 test report

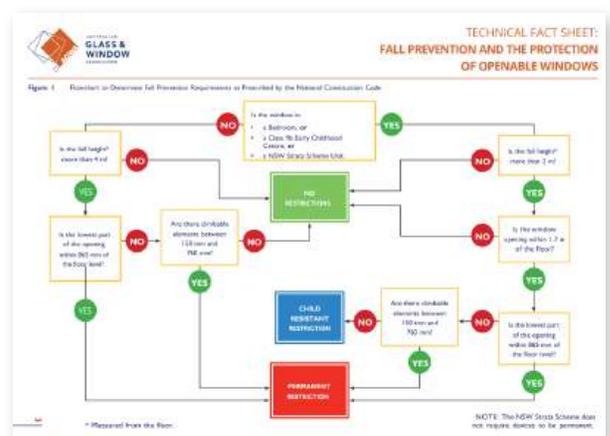
Manufacturer Technical Manuals



Key Assessment Criteria

All windows in bedrooms with a height greater than 2m above ground level must be restricted to no more than 125mm opening or have fall prevention screens fitted.

Windows in other rooms, above 4m, where the lowest part of the opening is within 865mm of the floor must also be restricted or have fall prevention screens fitted.



AGWA Resources

AGWA TFS Fall Prevention



Performance Requirement

H6P1 Thermal Performance

Objective:

Windows and glazing designed to improve energy efficiency and occupant health and amenity as well as reduce greenhouse gas emissions

Application:

All external windows and glazed doors in habitable areas

DTS Clauses:

HP 13.3, HP 13.4.4

Primary Standard:

None

Other Standard:

NatHERS

Visual Inspections

Visual check to ensure windows match specification:



- operating type
- glass type
 - + single/insulated glass unit (eg. double-glazed)
 - + low-e coatings
 - + tone/tint

Documentation

NatHERS Certificate or energy report



WERS Certificate



Key Assessment Criteria

U-value for each window is less than that nominated (eg NatHERS certificate or energy report)



SHGC is within the permissible range nominated (eg NatHERS certificate or energy report)



AGWA Resources

AGWA Guide to Energy Efficiency Compliance



- SWA Climate Zones 123
- SWA Climate Zones 45
- SWA Climate Zones 678
- www.wers.net



Performance Requirement

H7P5 Bushfire Areas

Objective:

Windows in buildings in designated bushfire prone areas are constructed to provide resistance to bushfires in order to reduce the danger to life and reduce the risk of the loss of the building.

Application:

Buildings in a designated bushfire prone areas

DTS Clauses:

H7D4

Primary Referenced Standard:

AS 3959 Construction of buildings in bushfire prone areas

Other Standard:

AS 1530.8.1 Methods for fire tests on building materials, components and structures Part 8.1: Tests on elements of construction for buildings exposed to simulate bushfire attack - radiant heat and small flaming sources

AS 1530.8.2 Methods for fire tests on building materials, components and structures Part 8.2: Tests on elements of construction for buildings exposed to simulated bushfire attack - Large flaming sources

Visual Inspections Visual check to ensure windows match requirements



Documentation Compliance Certificate / Declaration of Conformity



AS 1530.8.1 or AS 1530.8.2 test report (as appropriate)

Key Assessment Criteria Requirements vary by BAL, but commonly require:

- metal screens to all operable windows
- toughened glass of the appropriate thickness where required
- appropriate frame materials



QUICK REFERENCE GUIDE	
AS 1530.8.1	AS 1530.8.2
Frame Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fixed in • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area 	Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fixed in • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area
Glazing Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area 	Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area
Screens Suitable screen of metal mesh fabricated with integrity or assembly. Metal or perforated steel with a minimum aperture of 2mm maximum hole size. <ul style="list-style-type: none"> • Corrosion resistant steel in • Bushfire in • Aluminium (except in bushfire prone area) Supporting frame must be made of steel or other: <ul style="list-style-type: none"> • Metal (including aluminium) or • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area 	Suitable screen of metal mesh fabricated with integrity or assembly. Metal or perforated steel with a minimum aperture of 2mm maximum hole size. <ul style="list-style-type: none"> • Corrosion resistant steel in • Bushfire in • Aluminium (except in bushfire prone area) Supporting frame must be made of steel or other: <ul style="list-style-type: none"> • Metal (including aluminium) or • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area
Code 101	101
Particulars 101	101

NOTE: This is a quick reference guide. The specific requirements of this standard apply to the actual level of the bushfire hazard.

Low fire energy test to standard conditions unless:

- Fully glazed window in
- Fully glazed window greater than 600 light or in bushfire prone area

Low fire energy test to standard conditions unless:

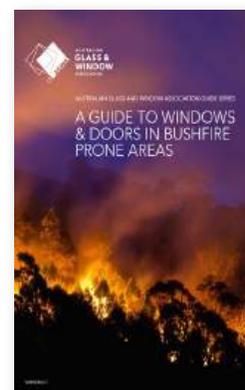
- Fully glazed window in
- Fully glazed window greater than 600 light or in bushfire prone area

NOTE: This is a quick reference guide. The specific requirements of this standard apply to the actual level of the bushfire hazard.

DTS PROVISIONS FOR WINDOWS	
AS 1530.8.1	AS 1530.8.2
Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fixed in • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area 	Low fire energy test to standard conditions unless: <ul style="list-style-type: none"> • Fixed in • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area
Suitable screen of metal mesh fabricated with integrity or assembly. Metal or perforated steel with a minimum aperture of 2mm maximum hole size. <ul style="list-style-type: none"> • Corrosion resistant steel in • Bushfire in • Aluminium (except in bushfire prone area) Supporting frame must be made of steel or other: <ul style="list-style-type: none"> • Metal (including aluminium) or • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area 	Suitable screen of metal mesh fabricated with integrity or assembly. Metal or perforated steel with a minimum aperture of 2mm maximum hole size. <ul style="list-style-type: none"> • Corrosion resistant steel in • Bushfire in • Aluminium (except in bushfire prone area) Supporting frame must be made of steel or other: <ul style="list-style-type: none"> • Metal (including aluminium) or • Fully glazed window in • Fully glazed window greater than 600 light or in bushfire prone area
Code 101	101

NOTE: This is a quick reference guide. The specific requirements of this standard apply to the actual level of the bushfire hazard.

AGWA Resources AGWA Guide to Windows in Bushfire Prone Areas



Performance Requirement

H8P1 Livable Housing Design

Objective:

Homes are designed to be easy to enter and navigate, and are capable of easy and cost-effective adaptation in response to the changing needs of occupants

Application:

All houses not subject to exemption

DTS Clauses:

H8D2

Primary Referenced Standard:

ABCB Livable housing design standard

Other Standard:

None

Visual Inspections Entry doors and showers



Documentation

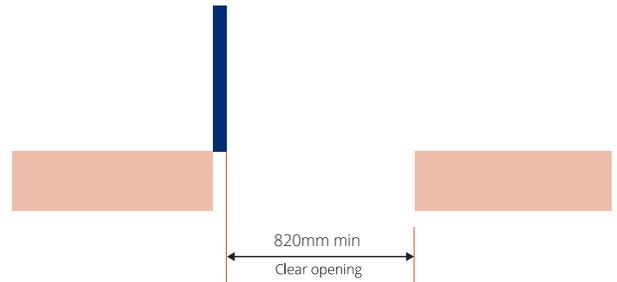
Compliance Certificate /
Declaration of Conformity



Key Assessment Criteria

Verify Entry Doors are 'step-free' and have a minimum clear opening width of 820 mm

Verify Showers are 'step-free'



WINDOWS AND DOORS FOR CLASS 2 TO 9 BUILDINGS

Performance Requirement

B1P1 Structural reliability and resistance
B1P3 Glass installations at risk of human impact

Objective:

Windows and glazing are capable of resisting appropriate wind-loads.
 Glazing subject to human impact avoids undue risk of injury to people.

Application:

All windows and glazed door
 All glass subject to human impact

DTS Clauses:

B1D3, B1D4

Primary Referenced Standard:

AS/NZ 1170.2 Structural Design actions - Part 2 Wind actions
 AS 2047 Windows and external glazed doors in buildings
 AS 1288 Glass in buildings

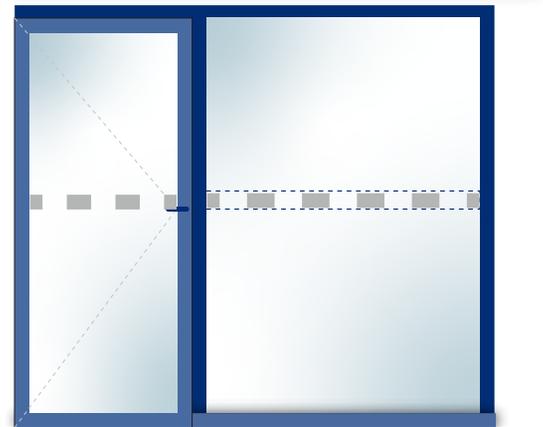
Other Standard:

AS 4420.1 Windows, external glazed, timber and composite doors - Methods of test
 AS 2208 Safety glazing materials in buildings
 AS/NZS 4284 Testing of building facades
 AS 4666 Insulating glass units
 AS/NZS 4667 Quality requirements for cut-to-size and processed glass

Visual Inspections Window Labels (where fitted)

Safety Glass Labels

Manifestation (Decals / Motifs / Visual Indicators)



Documentation

AGWA Compliance Certificate / Declaration of Conformity,

NATA accredited AS 2047 test reports,

Manufacturer technical manuals,

Engineers Reports

Manufacturer certificate of accreditation



Key Assessment Criteria



Wind Loads

Verification that type testing of the window or door system demonstrates it meets (or exceeds) the Serviceability Limit State (SLS), Ultimate Limit State (ULS) wind pressures and Water Penetration Resistance (WPR) required by AS 2047 as nominated by the building designer, including:

- location specific SLS & ULS (accounting for local pressure factors)
- WPR 30% positive SLS (min 150Pa)

Glass selection is in accordance with AS 1288

Product Size & Configuration

Check that the test report supports the relevant product size (overall height and width), size of any operating sashes and sectional properties of load-bearing elements (mullions and transoms).

- note AS 2047 permits a maximum of 10% extrapolation in height or width (or 15% in total area)
- engineers report required for larger product or more complex extrapolation (in-house engineering permissible)

Glass Type & Thickness for Human Impact

Establish that glazing is Grade A safety glass in accordance with AS 1288 for areas subject to human impact, such as doors, sidelights, stair and landings, kitchens & bathrooms. Monolithic toughened glass more than 5m above FFL or ground-level must be heat-soaked (unless suitable protection is provided such as a balcony)

1.4 Determination of Wind Actions

Values of wind actions (W) for use in design shall be established. The values shall be appropriate for the type of structure or structural element, its intended use, design working life and exposure to wind action.

The following wind actions, determined in accordance with this standard (using the procedures detailed in Section 2 and the values given in the remaining sections), shall be deemed to comply with the requirements of this Clause:

- (a) W_u determined using a regional wind speed appropriate to the annual probability of exceedance (P) specified for **ultimate limit states** as given in AS/NZS 1170.0, or the Building Code of Australia.
- (b) W_s determined using a regional wind speed appropriate to the annual probability of exceedance for the **serviceability limit states**.

AS 1288 Grade A Safety Glass - Maximum Areas (4-edge support)

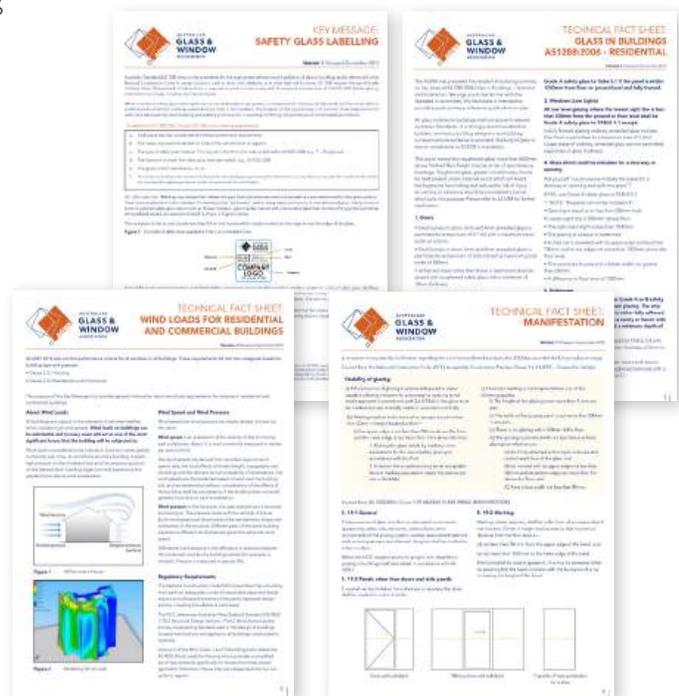
Glass Type	Glass Thickness						
	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm
Toughened & Toughened Laminate	1.0 m ²	*2.2 m ²	3.0 m ²	4.0 m ²	6.0 m ²	8.0 m ²	10.0 m ²
Laminated & Heat-Strengthened Laminate	-	-	2.2 m ²	3.0 m ²	5.0 m ²	7.0 m ²	9.0 m ²
Safety Organic-Coated Glass	2.0 m ²	2.0 m ²	2.2 m ²	3.0 m ²	5.0 m ²	7.0 m ²	9.0 m ²
Organic-Backed Safety Mirror	-	3.0 m ²	3.5 m ²	4.0 m ²	-	-	-

* Housing Provision Table 9.4.2 Limits 4 mm toughened to 2.0 m²

AGWA Resources



- AGWA A Guide to Window and Door Selection
- AGWA A Guide to Glass and Glazing
- AGWA TFS Wind Loads
- AGWA TFS Manifestation
- AGWA TFS Safety Glass Labelling
- AGWA TFS Glass in buildings



Performance Requirement

C1P2 Spread of fire C1P8 Fire protection of openings and penetrations

Objective:

Building elements and safeguards to prevent the spread of fire

Application:

Windows in Type A or Type B construction

DTS Clauses:

C2D2, C2D10, C4D5

Primary Referenced Standard:

AS 1530.1 Methods of fire tests on building materials, components and structures Part 1: Combustibility test for materials

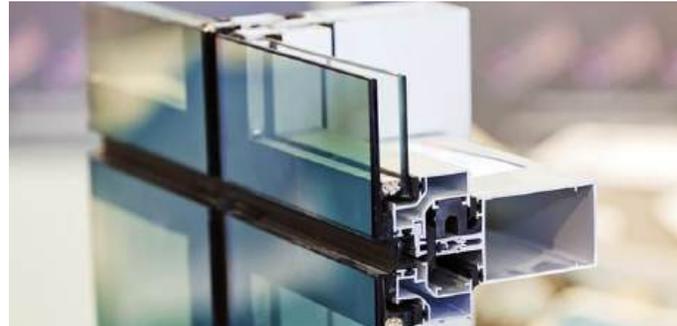
Other Standard:

None

Visual Inspections Identify that, where required:



- windows are made of non-combustible materials
- certain exemptions listed in C2D10 (4) or deemed non-combustible in C2D10 (5)



Documentation

AS 1530.1 Test report (for materials or systems not permitted under C2D10 (4) & (5))



Key Assessment Criteria

All windows in Class 2, 3, or 9 buildings 2 storeys or more in height, or in Class 5, 6, 7, or 8 buildings 3 storeys or more in height must be made of non-combustible materials.



Certain materials are deemed non-combustible or exempted including:

- Aluminium (framing)
- Gaskets
- Sealants
- Glass (including laminates and associated adhesives and tapes)
- Thermal breaks associated with glazing systems
- Isolated construction packers, shims and fixings (used in locating and supporting window systems)

Window requirements as specified in fire engineers report / PBDB

AGWA Resources

AGWA TFS Non combustibile elements



Performance Requirement

D1P1 Access for people with a disability
D1P2 Safe movement to and within a building

Objective:

Provide safe, dignified and equitable access to and within a building, and means for evacuation in an emergency

Application:

Doors within a required exit or continuous path of travel

DTS Clauses:

D2D7, D2D9, D3D16, D3D24, D3D25, D3D26, D4D3, D4D13

Primary Referenced Standard:

AS 1428.1 Design for access and mobility

Other Standard:

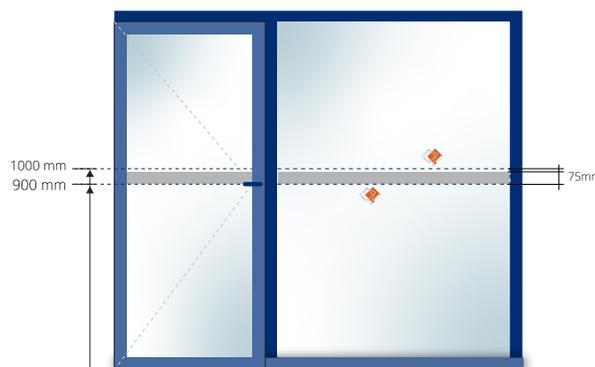
None

Visual Inspections



Where required:

- minimum clear opening of doorways
- door thresholds & ramps
- abutment of surfaces
- drainage grates
- visual indicators on glass
- door locks, latches & handles



Key Assessment Criteria



In a required exit doors must:

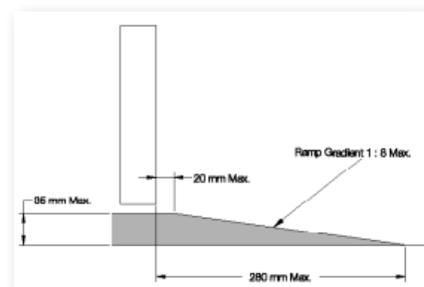
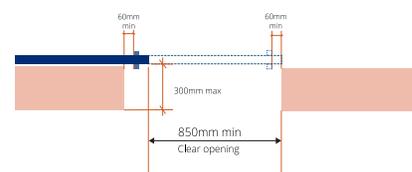
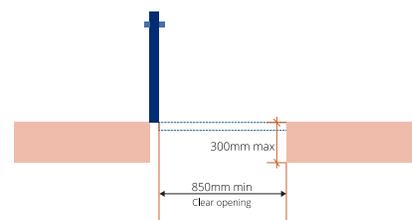
- have a clear opening of no less than 850 mm, including all fittings such as hinges, handles, etc
- if fitted with a threshold ramp, have no more than a 1:8 gradient and a maximum rise of 35 mm
- have handles, locks or latches fitted between 900 mm and 1100 mm above FFL and that comply with the dimensional requirements of AS 1428.1
- handles must conform with specific dimensional requirements in AS 1428.1
- have no more than 20N operating force (when fitted with a door closer)

All glazing along a continuous path of travel, including glazing which may be mistaken for a doorway or opening, must be marked with a 75mm solid contrasting band compliant with AS 1428.1:

- between 900 mm and 1100 mm above FFL
- with a luminance contrast of at least 30% against the floor surface or background surfaces with 2m

Any drainage grates must meet the following criteria:

- circular openings must be no more than 13 mm in diameter
- slotted opening not greater than 13 mm wide and oriented transverse to the direction of travel



AGWA Resources

AGWA TFS Doors and Disability



Performance Requirement

D1P3 Fall prevention barriers

Objective: Prevention of falls (for children) through openable windows

Primary Referenced Standard: None

Application:

Openable windows above:

- 2m in a Class 9b early childhood centre or a bedroom of a Class 2 or 3 building or a Class 4 part of a building; or
- 4m in all other cases

Other Standard:

AS 5203 Protection of openable windows fall prevention - Test sequence and compliance method

DTS Clauses:

D3D29

Visual Inspections Where required:

- windows are restricted, or
- safety/security screens fitted



Documentation

Compliance Certificate / Declaration of Conformity

AS 5203 test report

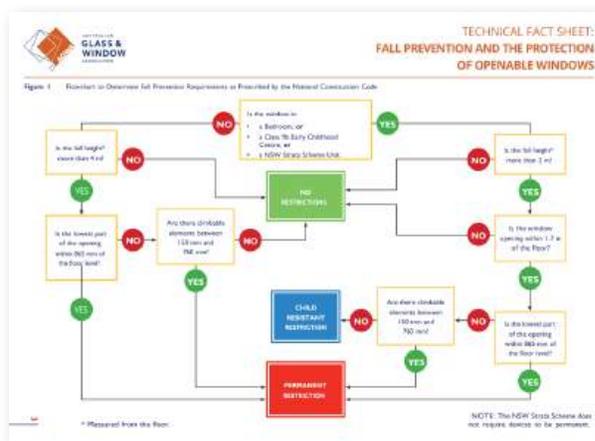
Manufacturer Technical Manuals



Key Assessment Criteria

All windows in bedrooms and early childhood centres with a height greater than 2m above ground level must be restricted to no more than 125mm opening or have fall prevention screens fitted.

Windows in other rooms, above 4m, where the lowest part of the opening is within 865mm of the floor must also be restricted or have fall prevention screens fitted.



AGWA Resources

AGWA TFS Fall Prevention



Performance Requirement

F1P2 Preventing rainwater from entering buildings F3P1 Weatherproofing

Objective:

Provide resistance to rain or surface water to protect occupants from illness or injury and the building from damage caused by water ingress

Application:

All external windows and glazed doors

DTS Clauses:

F1D5, F3D4

Primary Referenced Standard:

AS 2047 Windows and external glazed doors in buildings
AS 4654.2 Waterproofing membranes for external above-ground use

Other Standard:

AS 4420.1 Windows, external glazed, timber and composite doors - Methods of test
AS/NZS 4284 Testing of building facades

Visual Inspections Window labels (where fitted)



Waterproofing membrane, sill placement, waterstop angle and termination heights in accordance with AS 4654.2

Documentation



Compliance Certificate / Declaration of Conformity,
AS 2047 Test Reports,
AS/NZS 4284 Test Report (in accordance with F3V1 if appropriate)
Technical Manuals,
Engineers Reports



Key Assessment Criteria

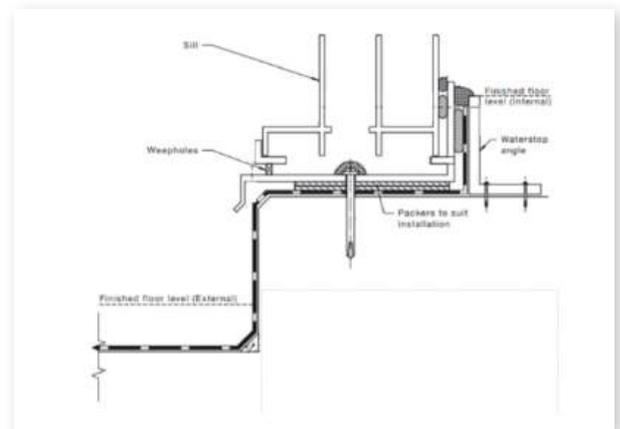


Water Penetration Resistance

Verification that type testing of the window or door system demonstrates it meets (or exceeds) the Water Penetration Resistance (WPR) level equivalent to 30% of the positive SLS wind pressure (min 150 Pa)

Waterproofing and Sill Installation

Verification the requirements for AS 4654.2 for sill installation, water-stop angles and termination heights have been met



AGWA Resources

AGWA TFS Weather Proofing of Buildings NCC Requirements



Performance Requirement

G5P1 Bushfire Resistance

Objective:

Windows in buildings in designated bushfire prone areas are constructed to provide resistance to bushfires in order to reduce the danger to life and reduce the risk of the loss of the building.

Application:

Buildings in a designated bushfire prone areas

DTS Clauses:

G5D3, G5D4

Primary Referenced Standard:

AS 3959 Construction of buildings in bushfire prone areas

Other Standard:

AS 1530.8.1 Methods for fire tests on building materials, components and structures Part 8.1: Tests on elements of construction for buildings exposed to simulate bushfire attack - radiant heat and small flaming sources

AS 1530.8.2 Methods for fire tests on building materials, components and structures Part 8.2: Tests on elements of construction for buildings exposed to simulated bushfire attack - Large flaming sources

Visual Inspections Visual check to ensure windows match requirements



QUICK REFERENCE GUIDE	
BAL 12.5	BAL 19
Frame Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 	Frame Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic.
Glass Laminated glass must be Grade A safety glass with a minimum thickness of 6mm.	Glass Laminated glass must be Grade A safety glass with a minimum thickness of 6mm.
Screens Operable systems of window must be protected either internally or externally. Must be protected from both pressure exposure of 2 or more windward faces either: <ul style="list-style-type: none"> • Synthetic material or • Timber species with density greater than 800 kg/m³. Supporting frame must be made of either: <ul style="list-style-type: none"> • Metal (including aluminium) or • Synthetic material or • Timber species with density greater than 800 kg/m³. 	Screens Operable systems of window must be protected either internally or externally. Must be protected from both wind and pressure exposure of 2 or more windward faces either: <ul style="list-style-type: none"> • Synthetic material or • Timber species with density greater than 800 kg/m³. Supporting frame must be made of either: <ul style="list-style-type: none"> • Metal (including aluminium) or • Synthetic material or • Timber species with density greater than 800 kg/m³.
Case: 153	153
Hardware: 153	153
NOTES: 1. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 2. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 3. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 	

Documentation

Compliance Certificate / Declaration of Conformity



AS 1530.8.1 or AS 1530.8.2 test report (as appropriate)

Key Assessment Criteria

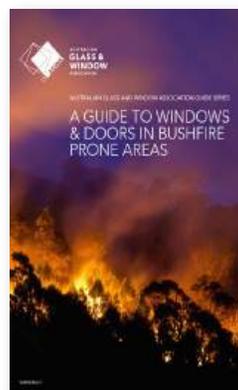
Requirements vary by BAL, but commonly require:

- metal screens to all openable windows
- toughened glass of the appropriate thickness where required
- appropriate frame materials



DTS PROVISIONS FOR WINDOWS	
BAL 12.5	BAL 19
Frame Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 	Frame Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic.
Glass Laminated glass must be Grade A safety glass with a minimum thickness of 6mm.	Glass Laminated glass must be Grade A safety glass with a minimum thickness of 6mm.
Screens Operable systems of window must be protected either internally or externally. Must be protected from both wind and pressure exposure of 2 or more windward faces either: <ul style="list-style-type: none"> • Synthetic material or • Timber species with density greater than 800 kg/m³. Supporting frame must be made of either: <ul style="list-style-type: none"> • Metal (including aluminium) or • Synthetic material or • Timber species with density greater than 800 kg/m³. 	Screens Operable systems of window must be protected either internally or externally. Must be protected from both wind and pressure exposure of 2 or more windward faces either: <ul style="list-style-type: none"> • Synthetic material or • Timber species with density greater than 800 kg/m³. Supporting frame must be made of either: <ul style="list-style-type: none"> • Metal (including aluminium) or • Synthetic material or • Timber species with density greater than 800 kg/m³.
Case: 153	153
Hardware: 153	153
NOTES: 1. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 2. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 3. Use fire rating seal to resist heat from either: <ul style="list-style-type: none"> • Metal or • Synthetic material or • Timber species with density greater than 800 kg/m³ or • Metal reinforced plastic. 	

AGWA Resources AGWA Guide to Windows in Bushfire Prone Areas



Performance Requirement

G7P1 Livable Housing Design

Objective:

Sole occupancy units are designed to be easy to enter and navigate, and are capable of easy and cost-effective adaptation in response to the changing needs of occupants

Application:

Class 2 SOU's

DTS Clauses:

G7D2

Primary Referenced Standard:

ABCB Livable housing design standard

Other Standard:

None

Visual Inspections Entry doors and showers



Documentation

Compliance Certificate / Declaration of Conformity

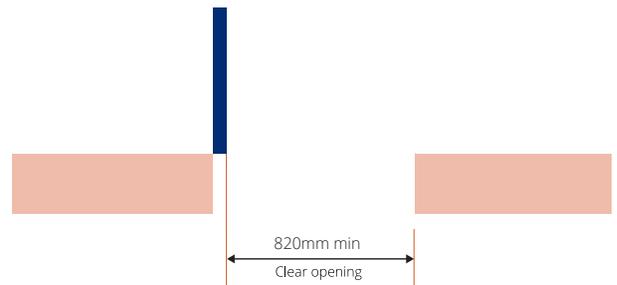


Key Assessment Criteria

Verify Entry Doors are 'step-free' and have a minimum clear opening width of 820 mm



Verify Showers are 'step-free'



Performance Requirement

J1P1 Energy use
J2P2 Thermal performance of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building

Objective:

Windows and glazing designed to improve energy efficiency and occupant health and amenity as well as reduce greenhouse gas emissions

Application:

All external windows and glazed doors in habitable areas

DTS Clauses:

J3D9, J3D11, J3D12, J4D6

Primary Referenced Standard:

None

Other Standard:

NatHERS

Visual Inspections

Visual check to ensure windows match specifications



- operating type
- glass type
- + single/insulated glass unit (eg. double-glazed)
- + low-e coatings
- +tone/tint

Documentation

AGWA Compliance Certificate / Declaration of Conformity



ESD or energy report

NatHERS Certificate (Class 2)

Window ID	Manufacturer	Frame Description	Frame Material	Opening Type	Glass Description	Ua	SHGC	Ts	A
W400000-141	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00
W400000-142	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00
W400000-143	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00
W400000-144	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00
W400000-145	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00
W400000-146	WDSure Default Window Library	Fixed Aluminium Framing Window Double Glazed	Aluminium	Fixed Window	DS-412	1.9	0.27	1.94	1.00

Key Assessment Criteria

U-value for each window is less than that required



SHGC is less than that specified

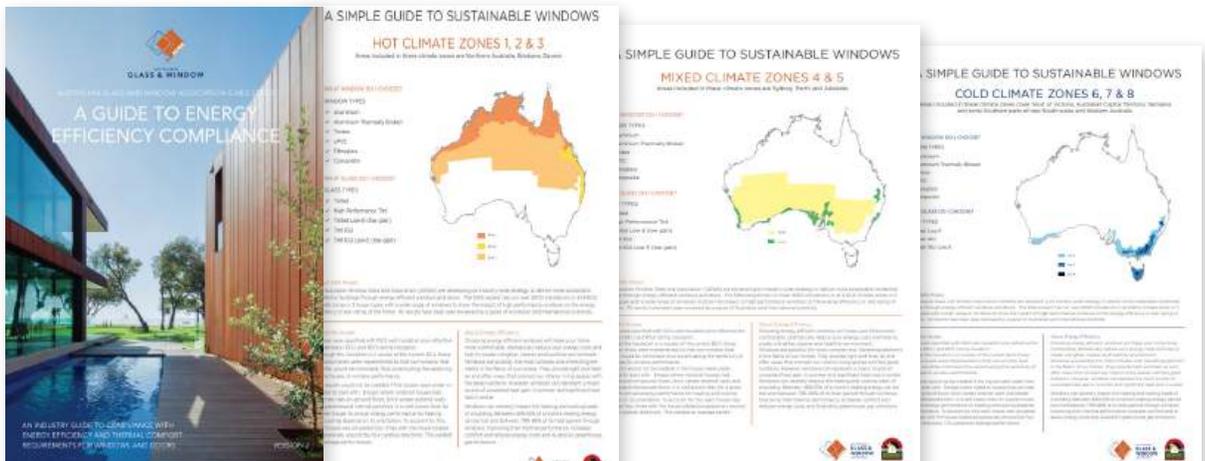


AGWA Resources

AGWA Guide to Energy Efficiency Compliance



- SWA Climate Zones 123
- SWA Climate Zones 45
- SWA Climate Zones 678



GLASS BALUSTRADES

Performance Requirements

- H1P1/B1P1 B1P3** Structural reliability and resistance Glass installations at risk of human impact
- D1P2** Safe movement to and within a building
- D1P3/H5P2** Fall Prevention Barriers

Objective:

Barriers and glazing are capable of preventing a fall. Glazing prevents undue risk of injury to people.

Application:

All glazed barriers

DTS Clauses:

B1D3, B1D3, B1D4, D3D17, D3D18, D3D19, D3D20, D3D22, H1D8, HP Section 11

Primary Referenced Standard:

AS 1288 Glass In Buildings
 AS/NZS 1170.0 Structural design actions - Part 0: General principles
 AS/NZS 1170.1 Structural design actions - Part 1: Permanent imposed and other actions
 AS/NZS 1170.2 Structural design actions - Part 2: Wind actions

Other Standard:

AS 2208 Safety glazing materials in buildings
 AS/NZS 4667 Quality requirements for cut-to-size and processed glass

Visual Inspections Barrier height/dimensions



Safety Glass Labels

Gaps - horizontal and vertical



Documentation AGWA Compliance Certificate / Declaration of Conformity



AS 1288 Appendix H (and Appendix I where appropriate) test reports

Engineers Reports



Key Assessment Criteria

Loads
Verification that type testing of the barrier system demonstrates it meets:

- barrier requirements as per Section 7 of AS 1288
- imposed live loads as per AS/NZS 1170.1
- wind loads as per AS/NZS 1170.2



Product Size & Configuration

Check that the test report supports the relevant product size (overall height and width), location of fixings, distance between supports:

- test report in accordance with Appendix H (and Appendix I) where appropriate) of AS 1288
- engineer report/specifications

Glass Type & Thickness

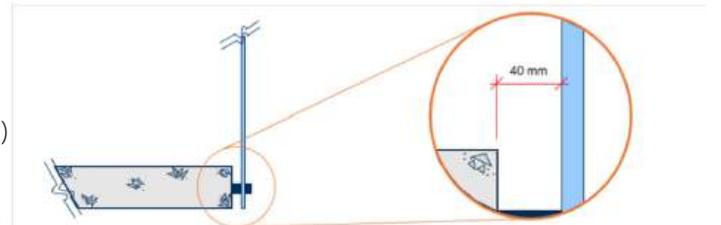
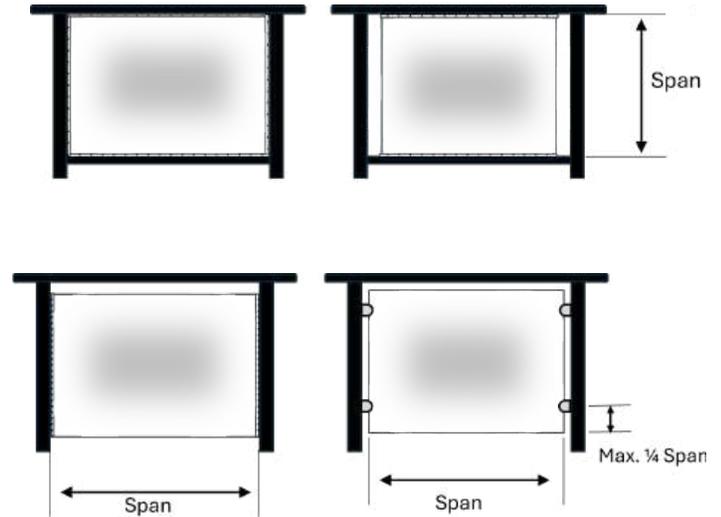
Establish that glazing is in accordance with Section 7 of AS 1288

Gaps

No more than 125mm gap anywhere
No more than 40mm horizontally (face fixed)

Monolithic toughened glass

Monolithic toughened glass is not permitted more than 5m above FFL or ground-level, or in structural barrier without an interlinking or load-supporting handrail



AGWA Resources AGWA TFS Safety Glass Labelling

AGWA TFS Barrier Quick Reference Guide



TECHNICAL FACT SHEET: Barrier Quick Reference Guide
VERSION 1 MAR 2024

The intent of this document is to provide a quick reference guide on the compliance requirements, as per AS 1288:2021, for barriers in relation to human impact (imposed live loads) protecting a difference in height greater or equal to 1m. This guide is broken up by common barrier type.

Key Information

Barrier Types:

- **Load Supporting Handrail:** The handrail supports the loads and is mechanically fixed to the structure or posts without reliance on the glass for structural support. The glass infill panel may or may not be connected to the handrail. These are commonly referred to as **IRB1** Barriers.
- **Interlinking Handrail:** The handrail is connected to adjacent glass panels, the building or both and relies on the glass in combination for structural support.
- **Non-Load Supporting Handrail:** These handrails are not designed to provide any structural support. The glass is solely relied upon for structural support. These are commonly referred to as **Capping Rails**.
- **No Handrail or Non-Load Supporting Handrail:** These barriers have no handrail or a non-load-supporting handrail and rely solely on the glass for structural support. These are commonly referred to as **Frameless Barriers**.

KEY MESSAGE: SAFETY GLASS LABELLING
Version 1 Released December 2022

Australian Standard AS 1288 sets out the procedures for the appropriate selection and installation of glass in buildings and is referenced in the National Construction Code (NCC) (barriers, such as stairs and balconies), or in other legislative instruments. AS 1288 refers to the use of safety glass, where Safety Glass is required, and it must comply with the minimum requirements of AS 1288 (Safety glass) materials in buildings, including any inset or tint.

When it comes to safety glass (including for balconies and stairs to stairwells), it is important for Glaziers, Builders and Carpenters to be able to understand the minimum marking requirements as listed in the standard. The purpose of this message is to ensure those requirements are clearly and succinctly stated, building and industry professionals in avoiding conflicting interpretations of the standard specifications.

Extract from AS 1288:2021, Clause 1 (2.1) Minimum marking requirements:

- a. Each panel shall be marked with the following minimum requirements:
- b. The name, registered trademark or logo of the manufacturer or supplier;
- c. The type of safety glass material. This may be in the form of a code as defined in AS/NZS 2206, e.g. 'T' – Toughened;
- d. The standard to which the safety glass has been tested, e.g. AS/NZS 2206;
- e. The grade of heat distribution, i.e. X;
- f. A number(s) indicate the minimum thickness for standard glazing material in millimetres, or a number(s) indicate the minimum thickness for non-standard glazing material to the nearest tenth of a millimetre.

AS 1288 notes that "Marking may be by either a label or a label that cannot be removed but is used as a permanent mark on the glass surface." There is no requirement in the standard for "marking to be permanent" and in many cases, such as 200-year laminated glass, safety tint or other required glass properties such as Shaded Control, glass may not be marked or a removable label may not be a viable option and be removed and replaced. An example of which is shown in Figure 1 below.

The exception to this is small panels less than 0.3 m² and spaces which always maintain an angle or near the edge of the glass.

Figure 1: Example of safety label applied to Post-Cast Laminated Glass

One of the most common concerns raised by builders, consumers, and most other building certifiers, relates to a lack of safety glass labelling. However, in most instances, the labels have been removed prior to installation. Consequently, a certifier has to rely on whether the glass is safety glass or not. To avoid such situations, AS 1288 recommends builders ensure safety glass labels that are not permanent in nature, remain on the product until after final inspection or handover to the client.

In the event that safety glass labels have been removed or in circulation, it is possible to verify that the subject glass is either designed or certified using testing equipment, however only the original manufacturer of the glass can certify that it is a Glass A Safety Glass conforming to AS/NZS 2206.

Figure 2: Site to Learn Design

Disclaimer: This key message has been developed to provide general guidance. Australian and a further AS 1288 members only to determine whether a label on glass is still valid and compliant with the requirements of the National Construction Code (NCC) and other legislative instruments. It is not intended to be used as a substitute for professional advice. It is not intended to be used as a substitute for professional advice. It is not intended to be used as a substitute for professional advice. It is not intended to be used as a substitute for professional advice.

GLASS POOL FENCES

Performance Requirement

H1P1/B1P1 Structural reliability and resistance
B1P3 Glass installations at risk of human impact
G1P2/H7P1 Swimming Pool Access

Objective:

Pool Barriers and glazing are capable of resisting appropriate loads.
 Glazing subject to human impact avoids undue risk of injury to people.

Application:

All glazed pool fences

DTS Clauses:

B1D3, B1D4, G1D2, H1D8, H7D2

Primary Referenced Standard:

AS 1288 Glass In Building
 AS 1926.1 Swimming pool safety - Safety barriers for swimming pools

Other Standard:

AS 2208 Safety glazing materials in buildings
 AS/NZS 4667 Quality requirements for cut-to-size and processed glass
 AS/NZS 3000 Electrical installations

Visual Inspections Barrier height/dimensions



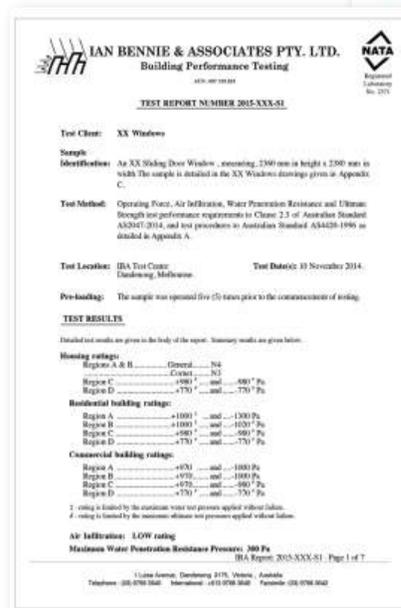
- Safety Glass Labels
- Gaps - horizontal and vertical
- Non-climbable Zones
- Hand and foot holds
- Access gates



Documentation AGWA Compliance Certificate / Declaration of Conformity,



- NATA accredited AS 1926 Appendix G test reports,
- NATA accredited AS 1288 Appendix H test reports,
- Engineers Reports



Key Assessment Criteria



Product Size & Configuration

- Height of fence
- Non-climbable zones
- Gates and latched
- Hand and foot holds

Applied Loads

- Verification that type testing of the barrier system demonstrates it meets (or exceeds) the criteria as laid out in AS 1926.1 (Appendix G test report)
- Wind Loads

Glass Type & Thickness

Establish that glazing is Grade A safety glass and in accordance with AS 1926.1

Verify conductive metal components within 1.25m of the pool edge have been earthed in accordance with AS 3000 Clause 5.6.2.6

Note: windows opening directly into pool areas are subject to additional requirements

Note: pool fences protecting a fall greater than 1m are subject to additional fall prevention barrier requirements



AGWA Resources AGWA TFS Safety Glass Labelling
AGWA TFS Barrier Quick Reference Guide



TECHNICAL FACT SHEET: Barrier Quick Reference Guide
VERSION 1 MAY 2024

The intent of this document is to provide a quick reference guide on the compliance requirements, as per AS 1288:2021, for barriers in relation to human impact (imposed live loads) protecting a difference in height greater or equal to 1m. This guide is broken up by common barrier type.

Key Information

Barrier Types:

- Load Supporting Handrail:** The handrail supports the loads and is mechanically fixed to the structure or posts without reliance on the glass for structural support. These are commonly referred to as Capping Rails.
- Interlinking Handrail:** The handrail is connected to adjacent glass panels, the building or both and relies on the glass in combination for structural support.
- Non-Load Supporting Handrail:** These handrails are not designed to provide any structural support. The glass is solely relied upon for structural support. These are commonly referred to as Capping Rails.
- No Handrail or Non-Load Supporting Handrail:** These barriers have no handrail or a non-load-supporting handrail and rely solely on the glass for structural support. These are commonly referred to as Frameless Barriers.

KEY MESSAGE: SAFETY GLASS LABELLING
Version 1 Released December 2019

Australian Standard (AS) 1288 sets out the procedures for the appropriate selection and installation of glass in buildings and is referenced in the National Construction Code (NCC) locations, such as stairs and balconies, or in other legislative locations. AS 1288 requires the use of Grade A Safety Glass (where Grade A Safety Glass is required or used) in most publicly accessible areas and the requirements of AS 1288:2019 Safety glazing materials in buildings, including any important differences.

When it comes to safety glass, looking for outside and inside glass panels, it is important for Dealers, Builders and Certified to be able to understand the minimum testing requirements as laid out in the standard. The purpose of this key message is to consider those requirements in detail and subsequently assist building and industry professionals in avoiding, certifying, or rectification of the standard specification.

Requirement A1 1288.2.6.6, Clause 1.2.3.3 Minimum marking requirements:

- a. Each panel shall be marked with the following minimum requirements:
 - i. The name, registered trademark or code of the manufacturer or supplier.
 - ii. The type of safety glass material. This may be in the form of a code as defined in AS/NZS 2206.6.3.7 – Toughened.
 - iii. The standard to which the safety glass has been tested, e.g. AS/NZS 1288.
 - iv. The grade of test classification, i.e. A.
- b. A number to indicate the nominal thickness for standard glazing material or, otherwise, a number to indicate the minimum thickness for non-standard glazing material to the nearest tenth of a millimetre.

AS 1288 states that "Marking may be by either a label of a type that cannot be removed without a permanent mark on the glass surface." There is no requirement in this standard for marking to be "permanent" and in many cases, such as double-paneled glass, safety tinted or wire-reinforced glass used in stairs and balconies, glass may be removed in a removable label that may not be a type that cannot be removed. An example of which is shown in Figure 1 below.

The exception to this is small panels less than 0.2m² and balconies which may be marked on the edge or near the edge of the glass.

Figure 1: Example of safety label applied to Post-Drilled Laminated Glass

One of the most common concerns raised by builders, consumers, and most other building professionals, relates to a lack of safety glass labelling. However, in most instances, the labels have been removed prior to inspection. Commitment, a partner has no way to know whether the glass in a building complies with the standard unless the AS/NZS 1288:2019 requirements for building where safety glass labels. The action on glass panels is to mark on the product until after final inspection or handover to the client.

In the event that a safety glass label has been removed prior to installation, it is possible to verify that the safety glass is either toughened and laminated using specialist equipment. However, only the original manufacturer of the glass can certify that it is a Grade A Safety Glass conforming to AS/NZS 1288.

Figure 2: Site to Label Design

Disclaimer: This key message has been developed by the Australian Glass and Window Association and is intended only as a guide. It is not intended to be used as a substitute for professional advice. The Australian Glass and Window Association (AGWA) is not responsible for any liability for any person for anything done in reliance on the information. For assistance in interpreting the NCC or any other legislation, please contact the Australian Glass and Window Association (AGWA) at 130 300 3000 or www.agwa.com.au.

SHOWERSCREENS

Performance Requirement

H1P1/B1P1 Structural reliability and resistance
B1P3 Glass installations at risk of human impact

Objective:
 Glazing subject to human impact avoids undue risk of injury to people.

Application:
 All Glazed Showerscreens

DTS Clauses:
 B1D4, H1D8, HP Section 8.4 & 10.2

Primary Referenced Standard:
 AS 1288 Glass In Building
 AS 3740 Waterproofing of Domestic Wet Areas

Other Standard:
 AS 2208 Safety glazing materials in buildings
 AS/NZS 4667 Quality requirements for cut-to-size and processed glass

Visual Inspections Safety Glass Labels



Documentation Compliance Certificate / Declaration of Conformity



Manufacturer technical manuals



Key Assessment Criteria Glass Type & Thickness

Establish that glazing is in accordance with AS 1288 and glazed with Grade A safety glass



Water-stop angle and waterproofing in accordance with AS 3740 for enclosed or un-enclosed shower area

AGWA Resources

- AGWA TFS Shower Screen Installation
- AGWA TFS Safety Glass Labelling
- AGWA TFS Unframed Shower Screens
- AGWA TFS Shower Screen Care & Maintenance

