

AS 1288:2021



Glass in buildings — Selection and installation



AS 1288:2021

This Australian Standard ® was prepared by BD-007, Glazing and Fixing of Glass. It was approved on behalf of the Council of Standards Australia on 28 May 2021.

This Standard was published on 25 June 2021.

The following are represented on Committee BD-007:

- Australian Building Codes Board
- Australian Glass and Window Association — Windows
- Australian Glass and Window Association — Glass/Glazing
- Australian Industry Group
- Australian Institute of Building Surveyors
- Engineers Australia
- Housing Industry Association
- Master Builders Australia
- National Association of Testing Authorities Australia
- Skylight Industry Association of Australia
- Swinburne University of Technology
- University of New South Wales
- University of Technology Sydney
- Vinyl Council of Australia
- Window and Door Industry Council
- Window Film Association of Australia and New Zealand

This Standard was issued in draft form for comment as DR AS 1288:2020.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

ISBN 978 1 76113 386 2

Glass in buildings — Selection and installation

First published as AS CA26—1957.
Previous edition AS 1288—2006.
Fifth edition AS 1288:2021.

© Standards Australia Limited 2021

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee BD-007, Glazing and Fixing of Glass, to supersede AS 1288—2006.

The objective of this document is to provide uniform direction for the use and installation of glazing throughout Australia to allow its use in legislation, and to clarify technical definitions.

This document will be referenced in the Building Code of Australia 2022; thereby superseding AS 1288—2006.

The most significant changes of this revision include the following:

- (a) Update [Section 1](#) to reflect introduction of new material.
- (b) Expand [Section 6](#) provisions to include three-sided support.
- (c) Include new charts and tables for [Section 6](#) to assist interpretation for users.
- (d) Assess/resolve loading requirements for glass balustrades and overhead glazing.
- (e) Inclusion of informative information in respect to post-breakage performance of materials involved.
- (f) Resolve ambiguity and clarify requirements for loading requirements to interlinking handrails in glass balustrades.
- (g) New test method for glass barriers in [Appendix H](#) and [I](#).
- (h) New imposed load table in [Appendix J](#).
- (i) Update changed sections to adhere to NCC drafting protocols (i.e. [Sections 1, 6](#) and [7](#) only).

This document makes recommendations for design and installation practice based on proven techniques.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

The terms “normative” and “informative” are used in Standards to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope	1
1.2 Application	1
1.3 Normative references	2
1.4 Terms and definitions	3
1.5 Notation	9
Section 2 Materials	12
2.1 Glass	12
2.1.1 General	12
2.1.2 Heat-strengthened glass	12
2.1.3 Toughened glass	12
2.1.4 Safety glazing material	12
2.1.5 Insulating glass units	12
2.1.6 Glass material properties	12
2.2 Other glazing materials	13
2.2.1 General	13
2.2.2 Structural sealant	13
2.2.3 Linseed oil putty	13
2.2.4 Steel sash putty	13
2.2.5 Gaskets	13
2.2.6 Preformed tape	13
2.2.7 Setting blocks, location blocks, and distance pieces	13
Section 3 General design criteria	14
3.1 General	14
3.2 Loads and other actions	14
3.2.1 Loads	14
3.2.2 Load combinations	14
3.3 Limit states	14
3.3.1 General	14
3.3.2 Ultimate design strength	15
3.3.3 Serviceability limit states	16
3.4 Laminated glass and insulating glass units	17
3.4.1 Laminated glass	17
3.4.2 Insulating glass units (IGU)	18
3.5 Frames	18
3.5.1 General	18
3.5.2 Deflection limits	18
3.5.3 Panels glazed into the building structure	18
3.5.4 Mixed framing	18
3.6 Design thickness of glass	18
3.6.1 Glass of standard nominal thickness	18
3.6.2 Glass of non-standard nominal thickness	19
3.6.3 Maximum area for 3 mm annealed glass	19
3.7 Structural silicone	19
3.7.1 General	19
3.7.2 Strength limit state	19
3.7.3 Serviceability limit state	19
3.8 Selection of glass for minimizing the risk due to glass spontaneous fracture	19
3.8.1 General	19
3.8.2 Requirements to minimize the risk	20
Section 4 Design for wind loading	21
4.1 General	21

4.2	Design wind pressure	21
4.3	Insulating glass units	21
4.4	Maximum span for glass panels subjected to wind loading	21
4.4.1	General	21
4.4.2	Rectangles of glass supported along all four edges	22
4.4.3	Rectangles of glass supported on two opposite edges	22
4.4.4	Rectangles of glass supported on three edges	22
4.4.5	Heat-strengthened laminated and toughened laminated glass	22
4.4.6	Serviceability checks	22
4.5	Organic safety films and other glass coatings	23
Section 5	Criteria for human impact safety	65
5.1	Scope	65
5.2	Doors	66
5.3	Side panels	67
5.3.1	General	67
5.4	Glazing capable of being mistaken for a doorway or opening	68
5.4.1	General	68
5.4.2	Exceptions	68
5.5	Low-level glazing in residential buildings	68
5.6	External shopfronts	68
5.7	Internal shopfronts and internal partitions	69
5.7.1	General	69
5.7.2	Fully framed glazing	69
5.7.3	Partly framed glazing	69
5.8	Bathroom, ensuite and spa room glazing	69
5.8.1	General	69
5.8.2	Fully framed glazing	70
5.8.3	Partly framed glazing	70
5.8.4	Frameless glazing	70
5.9	Balustrades	70
5.10	Schools, early childhood centres, aged care buildings and nursing homes	70
5.10.1	General	70
5.10.2	Schools and early childhood centres	70
5.10.3	Aged care buildings and nursing homes	70
5.11	Mirrors and other types of glass subject to risk of human impact	71
5.12	Louvre blades subject to risk of human impact	71
5.13	Window seat glazing	71
5.14	Operable windows	71
5.15	Two-edge unframed glazing	71
5.16	Stairway glazing	71
5.17	Leadlights	72
5.17.1	General	72
5.17.2	Doors and sidelights	72
5.17.3	Windows and other applications	72
5.17.4	Low level glazing other than bathrooms	72
5.17.5	Bathrooms	73
5.18	Curved glass	73
5.19	Making glass visible (manifestation)	73
5.19.1	General	73
5.19.2	Panels other than doors and side panels	73
5.19.3	Marking	73
5.20	Unframed edges	74
5.21	Use of safety glass of non-standard thicknesses	74
5.22	Insulating glass units	74
5.23	Identification of safety glass	74
5.23.1	Original panels	74
5.23.2	Cut panels	74
5.23.3	Minimum marking requirements	74

5.23.4	Louvre blades and small panels.....	75
5.23.5	Non-standard thickness panels.....	75
5.24	Areas subject to high risk of breakage.....	75
5.25	Fire doors.....	75
Section 6	Sloped overhead glazing.....	79
6.1	General.....	79
6.2	Loads and actions.....	79
6.2.1	Loads.....	79
6.2.2	Load combinations.....	80
6.3	Design criteria.....	80
6.4	Selection of overhead glass.....	80
6.4.1	General.....	80
6.4.2	Permanent, imposed and other actions.....	80
6.4.3	Wind actions.....	81
6.4.4	Live load (concentrated point load) application.....	81
6.4.5	Combined loads (dead, wind).....	81
6.4.6	Glass thickness.....	81
Section 7	Barriers or balustrades.....	95
7.1	General.....	95
7.2	Handrails.....	95
7.3	Loads and other actions.....	95
7.3.1	Loads.....	95
7.3.2	Load combinations.....	95
7.4	Selection of barrier glass.....	96
7.4.1	General.....	96
7.4.2	Structural barriers — Cantilevered glass — Protecting a difference in level less than 1 000 mm, no handrail or non-load-supporting handrail.....	96
7.4.3	Structural barriers — Two-edge support (two opposite edges) — Protecting a difference in level less than 1 000 mm, no handrail or non- load-supporting handrail.....	96
7.4.4	Structural barriers — Three-edge support (bottom and two sides) — Protecting a difference in level less than 1 000 mm, no handrail or non- load-supporting handrail.....	97
7.4.5	Structural barriers — All types — Protecting a difference in level equal to or greater than 1 000 mm, interlinking handrail.....	97
7.4.6	Structural barriers — All types — Protecting a difference in level greater than or equal to 1 000 mm, no handrail or non-load-supporting handrail.....	99
7.4.7	Infill barriers — Protecting any difference in level, load-supporting handrail.....	101
7.5	Swimming pool barriers/fences.....	106
Section 8	Installation.....	107
8.1	Scope.....	107
8.2	Site working and damage of glass.....	107
8.3	Dimensional requirements.....	107
8.3.1	General.....	107
8.3.2	Front putty width.....	107
8.3.3	Dimensions of rebates and grooves.....	107
8.3.4	Glass dimensional tolerance.....	107
8.4	Glazing materials.....	109
8.4.1	Suitability of materials.....	109
8.4.2	Compatibility of materials.....	109
8.4.3	Application of materials.....	109
8.4.4	Life expectancy of materials.....	109
8.5	Setting blocks.....	110
8.6	Location blocks.....	110
8.7	Distance pieces.....	113
8.8	Preparation of rebates and grooves.....	113
8.9	Glazing beads.....	113

8.10	Structural sealants	113
Section 9	Framed, unframed, and partly framed glass assemblies	114
9.1	General	114
9.2	Structural silicone	114
9.2.1	General	114
9.2.2	Selection	114
9.2.3	Cleaning	114
9.2.4	Application	114
9.2.5	Silicone curing	114
9.3	Faceted glazing	114
9.3.1	General	114
9.3.2	Glass and silicone selection	115
9.3.3	Design of faceted panels	115
9.4	Fin-supported glazing	116
9.4.1	General	116
9.4.2	Design method	117
9.5	Unframed toughened and toughened laminated glass assemblies	120
9.5.1	General	120
9.5.2	Design considerations	120
9.5.3	Glazing techniques	122
Appendix A	(informative) Simplified method for determining ultimate and serviceability limit state design wind pressures	124
Appendix B	(informative) Worked examples to Section 4 wind loading requirements	136
Appendix C	(informative) Basis for determination of fin design to prevent buckling	143
Appendix D	(informative) Recommendations for shower screen installation	149
Appendix E	(informative) Sloped overhead glazing fracture characteristics	150
Appendix F	(informative) Structural silicone glazing	152
Appendix G	(informative) Flow charts	156
Appendix H	(normative) Glass barrier structural resistance — Methods of test and determination of results	162
Appendix I	(informative) Post-breakage test for structural barriers	168
Appendix J	(informative) Imposed load table	170
Bibliography	174

Australian Standard®

Glass in buildings — Selection and installation

Section 1 Scope and general

1.1 Scope

This document sets out procedures for the selection and installation of glass in buildings, subject to wind loading, human impact, and special applications, such as overhead glazing, barriers and glass assemblies.

Glass strength requirements are given for glazing, based on the tensile stresses developed on the surface of the glass.

This document does not cover the following:

- (a) Glazing in lift cars and lift wells.
- (b) Furniture glass, cabinet glass, vanities, glass basins, refrigeration units, internal glass fittings and internal wall mirrors not specifically covered by [Section 5](#).
- (c) Buildings and structures with no public access intended for horticultural or agricultural use.

NOTE 1 The traditional use of these buildings suggests their current construction and glazing practices are acceptable. However, consideration should always be given to the brittle nature of glass and the consequences of its breakage.
- (d) Windows and doors in heritage buildings as defined by the relevant State or Territorial authority.
- (e) Restoration and or repairs to existing leadlights.
- (f) Special glazing applications which might fail due to the stresses other than tensile stresses, such as shear stresses.
- (g) Glass blocks, bricks or pavers.

NOTE 2 In Australia, legislation requires products to be “fit for purpose”. Where glazing is replaced because of breakage or any other reason, it is recommended that the replacement glass conform to the requirements of the relevant sections of this document, unless otherwise permitted by the relevant legislation.

1.2 Application

The criteria for the selection of thickness and type of glass for particular applications shall be as specified in separate sections of this document as follows:

- (a) For installations subject to wind loading, glass to be selected using either first principles as set out in [Section 3](#), or using the simplified design as set out in [Section 4](#).

NOTE 1 [Section 4](#) may give a more conservative design solution.
- (b) For human impact considerations, glass to be selected according to [Section 5](#).
- (c) For overhead glazing, glass to be selected according to [Section 6](#).
- (d) For barriers, glass to be selected according to [Section 7](#).
- (e) For framed, unframed, and partly framed glass assemblies glass to be selected in accordance with [Section 9](#).

Glass shall be installed in accordance with [Section 8](#).