AS 1288, Parts 1 to 3—1979
UDC 698.3
SfB (31) RO

Australian Standard 1288, Parts 1 to 3–1979

SAA GLASS INSTALLATION CODE

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Architectural Aluminium Fabricators Association

Confederation of Australian Industry

CSIRO, Division of Building Research

Department of Construction

Department of Local Government, Victoria

Department of Public Works, N.S.W.

Experimental Building Station

Federated Glass Merchants Association of Australia

Health Commission of New South Wales

Plastics Institute of Australia Inc.

Royal Australian Institute of Architects

Timber Merchants Association of Victoria

Universities

This standard, prepared by Committee BD/7, Glazing and Fixing of Glass, was approved on behalf of the Council of the Standards Association of Australia on 26 January 1979, and was published on 1 April 1979.

To keep ahead of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

AUSTRALIAN STANDARD

RULES FOR THE INSTALLATION OF GLASS IN BUILDINGS

known as

SAA GLASS INSTALLATION CODE

AS 1288, Parts 1, 2 and 3–1979

First published (as AS CA26) 1957
Revised and issued as AS 1288 1973
Revised 1979
Reprinted 1983

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.

ISBN 0 7262 1639 9

PREFACE

This standard was prepared by the Association's Committee on Glazing and Fixing of Glass as a revision of AS 1288 — 1973, which it accordingly supersedes.

The standard is in three Parts. Part 1 deals with the selection of type and thickness of glass, Part 2 with glazing techniques, and Part 3 with unframed toughened glass assemblies.

For the 1973 edition, the preparation of Part 1 incurred an extensive investigation of overseas literature on glazing and sizes. The investigation showed that although the British approach to the problem of sizes to withstand wind pressures was an empirical one, practices in America more nearly accorded with the theoretical investigations conducted at the Division of Building Research of CSIRO. The theoretical investigations included the classic theories of bending in plates, and took into consideration the action of membrane stresses which it was suggested conferred more strength to loaded glass plates than had been generally realized.

It was found that a reasonably close correspondence existed between the theoretical calculations and the broadly similar recommendations of PPG Industries (formerly Pittsburgh Plate Glass Company) and Libby-Owens-Ford Glass Company in America. For certain thicknesses, the recommendations of the former were the more conservative while for others they were the less conservative. However for glass of 6 mm nominal thickness, the recommendations of both these American companies were virtually identical and also with the more recent recommendations by the British company, Pilkington Brothers Limited.

After consideration, the committee agreed that it would be preferable to be guided by the American recommendations rather than prepare another set of rules. In order to avoid too radical a departure from Australian practice at the time, it was agreed that the more conservative of the American recommendations would be used.

Thus for glass supported on two opposite edges only, stress figures for 3-second wind gusts were used in the simple beam formula, corresponding to a risk of failure of 8 in 1000.

For glass supported on all four sides, lower stresses were used. This provided for approximately the same risk of failure of 8 in 1000 for high aspect ratios, i.e. ratios of long side to short side, but progressively reduced the risk of failure to 2 in 1000 for an aspect ratio of 1. This was done to limit unduly high deflections which would result if the same risk of failure were used for small aspect ratios. The lower stresses used were actually those originally associated with fastest mile wind velocities.

In this revision, wind loading considerations are based on AS 1170, SAA Loading Code, Part 2 — Wind Forces, the publication of which has removed the necessity in AS 1288 for detailed explanations concerning the derivation of the forces considered to be acting on glass due to wind pressure.

The design considerations associated with the calculation of glass thickness for known loads are set out in sufficient detail to enable the user to follow the steps recommended for the selection of glass thicknesses appropriate to various glass areas and anticipated loading conditions.

The 1973 edition dealt with glass subject to human impact and other special considerations in Section 3 of Part 1. The committee was particularly concerned with this Section both as to ease of use by statutory authorities and the building industry generally and also the level of safety implied in the requirements.

In order to consider all aspects of this Section, the committee obtained representation from additional interests.

The present edition includes requirements for special situations such as louvres and non-vertical glazing in Section 3 of Part 1, and human impact safety requirements are given in Section 4 of Part 1. These Sections cross refer to AS 2208, Safety Glazing Materials for Use in Buildings and deal separately with domestic and non-domestic occupancy. The safety levels implicit in the requirements reflect a trend towards safer glazing sizes in line with current world trends.

The correct application of this standard for choice of glass thickness or area therefore requires consideration of Sections 2, 3 and 4 of Part 1.

Section 4 of Part 1 also makes reference to the replacement of damaged non-conforming glass panels. The committee expresses the hope that the glass industry will emphasize the added protection the user would get from the use of glass complying with this standard and that it will accordingly recommend its use.

Poor performance of glazing is frequently attributable to poor practice in the installation of glass, and consequently extensive recommendations dealing with glazing techniques are given in Part 2. It will be found that the procedures detailed cover most of the architectural treatments to be found in current Australian practice, unrestricted by considerations of height limitations.

The increasing use of toughened glass assemblies in larger buildings prompted the inclusion of Part 3 in the 1973 edition. This Part has been revised and is presented separately with the inclusion of specific requirements in relation to glazing techniques for toughened glass assemblies because, although the wind loading requirements are similar from a design viewpoint, the actual glazing techniques form part of the designed glazing system.

It is not intended that this standard be applied to patented glazing or proprietary glazing techniques, in respect of which the user should satisfy himself that the product complies with all other requirements of the standard.

It should also be noted that this standard does not fully cover glazing other than vertical.

This standard may require reference to the following standards:

AS 1170 SAA Loading Code
Part 1 — Dead and Live Loads
Part 2 — Wind Forces

AS 1263 Oil-based Putty

AS 1639 Code of Practice for Design and Installation of Corrugated Asbestos Cement Roofing

AS 1905 SAA Fire Door Code
Part 1 — Fire Doors

AS 2047 Aluminium Windows for Buildings

AS 2146 Performance of Timber Window Assemblies

AS 2208 Safety Glazing Materials for Use in Buildings (Human Impact Considerations)

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Australian Standard
RULES FOR THE INSTALLATION OF GLASS IN BUILDINGS

PART 1 — SELECTION OF GLASS

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE OF PART. This Part of these Rules (hereinafter referred to as 'this Part of the Code') sets out procedures for the selection of glass for installation in buildings, according to the type of material and the minimum thickness allowable for a given area (or maximum area allowable for a given thickness), and irrespective of the size of the glass and of the exposure conditions.

NOTES:

1. Throughout this Part of the Code the area referred to is the area of the clear unsupported opening after glazing.
2. The specific installation procedures, i.e. the 'glazing' of the glass, are laid down in Part 2 of the Code.

1.2 APPLICATION. The thickness of glass required for a given area (or the area of glass for a given thickness) shall be determined on the basis of the criteria given in Sections 2, 3 and 4 as follows:

(a) For installations subject to wind loading, the thickness or area shall be determined according to Section 2.

(b) For special situations other than those covered in Sections 2 and 4, the thickness or area shall be determined according to Section 3.

(c) For human impact considerations, the thickness or area shall be determined according to Section 4.

The actual thickness or area used shall be at least the maximum of the thicknesses so determined, or at most the minimum of the areas, unless otherwise stated.

1.3 DEFINITIONS. For the purpose of this Part of the Code, the following definitions apply.

1.3.1 Administrative definitions.

(a) *Approved* — approved by the Building Authority, or approved by the designer and the Building Authority.

(b) *Building Authority* — a body having statutory control over the design and erection of buildings or structures in the area in which the building or structure is to be erected.

1.3.2 Glass — a hard brittle amorphous substance produced by fusion and usually consisting of mutually dissolved silica or silicates that also contain soda and lime. It may be transparent, translucent or opaque.

NOTE: During manufacture, glass is cooled gradually in an annealing operation in order to reduce residual stresses and strains which can be produced during cooling. For this reason, wherever ordinary glass is mentioned in this standard, it is referred to as ordinary annealed glass.

1.3.3 Safety glazing materials — materials so constructed, treated or combined with other materials as to reduce the likelihood of cutting and piercing injuries resulting from human impact with them, and which comply with the relevant requirements of AS 2208. Such materials include, but are not limited to, the following:

(a) *Toughened safety glass* — glass which has been converted to a safety glass by subjection to a process of pre-stressing (by heat or chemical treatment) so that if fractured the entire piece disintegrates into small relatively harmless particles.

NOTES:

1. In general, the heat treatment or chemical treatment process greatly reduces the tendency of glass to fracture under the action of external forces and changes of temperature.
2. After being toughened, the glass cannot be cut, drilled, ground or otherwise reworked. Etched, sand-blasted, engraved or otherwise worked surfaces should have such surface working carried out prior to toughening. Surface treatments should be kept as shallow as possible to ensure that the glass can be adequately toughened.
3. Toughened glass is also known as tempered glass.

(b) *Laminated safety glass* — glass consisting of two or more sheets of glass bonded together by one or more sheets of plastics interlayer.

NOTE: Laminated safety glass will crack and break under sufficient impact, but the pieces of glass tend to adhere to the plastics interlayer and not to fly or fall apart.

(c) *Safety wired glass* — a single sheet of glass with wire completely embedded in the glass.

NOTE: Safety wired glass complying with AS 2208 will crack and break under sufficient impact, but the pieces of glass tend to be held together by the embedded wire.

(d) *Safety organic-coated glass* — a glazing material consisting of a piece of glass coated and bonded on one or both sides with a continuous polymeric coating sheet or film.

NOTE: The coating extends to within 5 mm of the frame in an installed panel.

1.3.4 Technical definitions.

(a) *Domestic occupancy* — buildings and such portions of buildings used as separate dwelling houses and flats, but not incorporating common circulation areas of blocks of two or more flats.

(b) *Non-domestic occupancy* — buildings other than those defined in domestic occupancy such as, but not limited to, hotels, hostels, motels, shops, offices, schools, public assembly buildings and factories, and those parts of domestic buildings common to a group of dwellings such as common circulation areas in blocks of two or more flats.