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Australian Standard 1225—1984

CLAY BUILDING BRICKS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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The following interests are represented on Committee BD/26:

Association of Consulting Engineers Australia
Australian Clay Brick Association
Australian Institute of Building Surveyors
Australian Uniform Building Regulations Co-ordinating Council
Brick Development Research Institute
CSIRO, Division of Building Research
Department of Housing and Construction
Department of Local Government, N.S.W.
Experimental Building Station
Master Builders Federation of Australia
N.S.W. Government Public Works Department
Royal Australian Institute of Architects

AUSTRALIAN STANDARD

CLAY BUILDING BRICKS

AS 1225—1984

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PREFACE

This edition of this standard, together with new editions of the test methods issued under the reference AS 1226, were prepared by the Association's Committee on Burnt Clay and Shale Building Bricks, to supersede AS 1225—1980 and AS 1226.1 to AS 1226.9—1980 respectively, which were conversions to SI units of AS A21—1964 and AS A140—1964.

Since the previous editions were published, there have been significant changes in community requirements for bricks and manufacturing responses to them.

In the preparation of these editions, the committee had to take into account—

(a) the significant increase in the proportion of production represented by extruded bricks;

(b) the fact that most bricks are used in structures that impose only modest demands on strength and neither require nor undergo calculated structural design;

(c) developments in the shapes and sizes of bricks;

(d) the popularity of and therefore the need to provide a specification for bricks chosen by their users for their appearance—these include bricks recovered from buildings that have been demolished, notably colonial sand-stock bricks, modern reproductions of such bricks, rumbled bricks and clinkered bricks;

(e) the advent of loadbearing brickwork as a structural medium for tall buildings; and

(f) the publication and wide acceptance of the Brick Development Research Institute's specification and methods of test for clay bricks.

The committee's deliberations took place against the background of a wide variety of opinion as to what constitute the important properties of bricks.

The committee decided that the need was for a basic standard that specified only the essential properties that should be common to all bricks.

It was concluded that more stringent requirements that might need to be complied with—higher strengths, higher precision, particular colours and textures—would best be specified by the prospective purchaser as the need arose.

The revised standards, therefore, provide a basic legislative and consumer-protection specification and methods of test with which all bricks for buildings must comply, but over and above which more stringent requirements might be imposed by purchasers as contractual requirements.

Guidance is given in an appendix as to how bricks to closer dimensional tolerances might be specified. A further appendix includes the recommendation that, for all bricks, appearance be specified in terms of a works sample indicating the range of acceptable variation.

The most notable deletions from the previous editions that were intended exclusively for pressed bricks are the 'ringing' test—no longer a universal criterion of quality—and requirements that bricks be free from a degree of cracking, voids, warpage, stones and pebbles for which it is impossible to provide objective criteria. These various determinants of 'soundness' have been replaced by a transverse-strength requirement which, although theoretically controversial, presents no practical problem to the responsible manufacturer.

Notable additions are the inclusion in the standard of durability classes, and the inclusion among methods of tests of the Brick Development Research Institute's methods for the prediction of permanent expansion and resistance to severe salt attack.

Among the methods of test the old range method of factoring the sample mean has been replaced by estimation of the lower 95 percent limit for the lot, because the latter can nowadays be readily done with a pocket calculator.

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1 SCOPE. This standard specifies requirements for burnt clay and burnt shale building bricks.

NOTES:

1. The standard provides a basic level of quality and regularity in size and shape for all clay bricks. Guidance is given in Appendix A on the specification of bricks to closer dimensional tolerances as a matter for agreement between purchaser and supplier.
2. It is recommended that colour, texture and regularity of shape requirements should be supplied by the purchaser (see Appendix B).

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1226 Methods of Sampling and Testing Clay Building Bricks
- 1226.1 Methods of Sampling
- 1226.2 Method of Measurement of Dimensions
- 1226.3 Method for Determining Transverse Strength
- 1226.4 Method for Determining Compressive Strength
- 1226.5 Method for Determining Characteristic Expansion
- 1226.6 Method of Test for Efflorescence
- 1226.7 Method of Examination for Pitting due to Lime Particles
- 1226.8 Method for Determining Initial Rate of Absorption (Suction)
- 1226.9 Method for Determining Water Absorption Properties
- 1226.10 Method for Determining Resistance to Salt Attack
- 1226.11 Method for Determining Lateral Modulus of Rupture

AS 1233 Glossary of Terms for Dimensional Coordination

AS 1234 Recommendations for Coordinated Preferred Dimensions in Building

AS 1475 SAA Blockwork Code

AS 1640 SAA Brickwork Code.

3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

3.1 Brick—a manufactured unit of generally rectangular prismatic shape intended for use in bonded masonry construction and not exceeding 4.0×10^6 mm^3 in gross volume.

3.1.1 *Clinker brick and rumbled brick*—bricks which are formed as rectangular prisms that with normal firing would produce clay bricks as defined in this standard, but which are manufactured with irregularities that produce a particular appearance.

3.1.2 *Modular brick*—a brick with manufacturing dimensions of 290 mm × 90 mm × 90 mm.

NOTE: It is recommended that the term 'modular' be restricted to those units all of whose format dimensions are multiples of 100 mm. AS 1233 and AS 1234 establish the terminology and principles of dimensional coordination.

3.1.3 *Traditional brick*—a brick with manufacturing dimensions of 230 mm × 110 mm × 76 mm.

3.2 Characteristic expansion—an estimate of the potential permanent unrestrained expansion of a brick during its first 5 years.

3.3 Characteristic strength—the strength (compressive or transverse) that can be expected to be exceeded by 95 percent of the bricks in the lot.

3.4 Efflorescence—the occurrence on the surface of a brick (or on a wall) of a (usually white) powdery deposit due to the crystallization and subsequent dehydration of soluble salts.

3.5 Lot—a group of bricks of one type and of specified characteristics and dimensions, made by the same manufacturer or obtained from the same source.

3.6 Manufacturing dimensions—the dimensions adopted for manufacture, to which the tolerances specified in Clause 6.3 apply.

NOTE: Bricks of dimensions other than those of modular and traditional bricks can be manufactured to comply with the requirements of this standard.

3.7 Pit—a hole formed on the surface of a brick by the expansion of a lime particle.

4 DIMENSIONAL CATEGORY. Bricks shall be designated by dimensional category according to the tolerance on manufacturing dimensions as follows:

(a) *ST0*—bricks not required to be precise in dimensions. (See Clause 6.3.)

NOTE: Bricks of this category are used in a substantial amount of brickwork and in walls that depend on the variability of the units for their attractive appearance.

(b) *ST3*—bricks where regularity in size is necessary. (See Appendix A.)

(c) *ST2*—bricks manufactured to finer tolerances for special applications. (See Appendix A.)

5 DURABILITY CLASS. Bricks may be classified according to their durability as follows:

(a) *Internal*—bricks suitable for use in an internal wall above a sheet or membrane damp-proof course.

(b) *Above damp-proof course*—bricks suitable for use in an external wall only above a sheet or membrane damp-proof course and below an adequate coping roof or similar top covering.

(c) *General purpose*—bricks suitable for use in an external wall under ordinary exposure conditions.

(d) *Exposure*—bricks suitable for use in external walls exposed to severe local conditions such as the following:

(i) Below the damp-proof course in areas where walls are exposed to attack from salts in the groundwater or from the brickwork itself (salt attack or salt damp).

(ii) On sea fronts where walls are exposed to attack from wind-borne salt spray.