Australian Standard™

AS 1816.1

Metallic materials—Brinell hardness test

Method 1: Test method (ISO 6506-1:1999, MOD)

PREFACE

This Standard was prepared by Standards Australia Committee MT-006, Mechanical Testing of Metals to supersede (in part) AS 1816—1990, *Metallic materials—Brinell hardness test*.

This Standard is an adoption with national modifications and is reproduced from ISO 6506-1:1999, *Metallic materials—Brinell hardness test*, Part 1: *Test method*.

This Standard is a modification of ISO 6506-1 in which the ISO Annex A has been changed to conform with established Australian practices for Brinell hardness testing.

Variations to the ISO text for Australia are set out in Appendix ZZ. Changes to the ISO text are indicated by a marginal bar.

This Standard is Method 1 of a series of Standards covering the Brinell hardness testing of metallic materials.

The series comprises the following Methods:

AS	
1816	Metallic materials—Brinell hardness test
1816.1	Method 1: Test method (ISO 6506-1:1999, MOD)
1816.2	Method 2: Verification and calibration of testing machines
1816.3	Method 3: Calibration of reference blocks

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page text and its identity is shown only on the title page.

(b) In the source text, 'this part of ISO 6506' should read 'this Australian Standard'.

(c) A full point substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
4498	Sintered metal materials, excluding hardmetals—Determination of apparent hardness	—	
4498-1	Part 1: Materials of essentially uniform section hardness		
6506	Metallic materials—Brinell hardness test	1816	Metallic materials—Brinell hardness test
6506-2	Part 2: Verification and calibration of testing machines	1816.2	Method 2: Verification and calibration of testing machines

The terms 'normative' and 'informative' have been used in this Standard to define the application of the annex or appendix to which they apply. A 'normative' annex or appendix is an integral part of a Standard, whereas an 'informative' annex or appendix is only for information and guidance.

INTRODUCTION

The force values in this part of ISO 6506 were calculated from kilogram force values. They were introduced before the SI-system was adopted. It was decided to keep the values based on the old units for this part of ISO 6506 but for the next revision it will be necessary to consider the advantage of introducing rounded values of test force and possible consequences on the hardness scales.

Attention is drawn to the fact that in this part of ISO 6506, only the use of the hardmetal ball indenter is specified.

The designation of the Brinell hardness is HBW and should not be confused with the former designation HB, or HBS when a steel ball indenter was used.

1 Scope

This part of ISO 6506 specifies the method for the Brinell hardness test for metallic materials and is applicable to to the limit of 650 HBW.

For specific materials and/or products, particular International Standards exist (i.e. ISO 4498-1).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 6506. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 6506 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4498-1, *Sintered metal materials, excluding hardmetals — Determination of apparent hardness — Part 1: Materials of essentially uniform section hardness*.

ISO 6506-2:1999, *Metallic materials — Brinell hardness test — Part 2: Verification and calibration of testing machines.*

3 Principles

An indenter (hardmetal ball with diameter D) is forced into the surface of a test piece and the diameter of the indentation d left in the surface after removal of the force F is measured.

The Brinell hardness is proportional to the quotient obtained by dividing the test force by the curved surface area of the indentation. The indentation is assumed to be spherical with a radius corresponding to half of the diameter of the ball.

4 Symbols and designations

See Figure 1 and Table 1.