STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 5016—2004
Metallic materials—Conversion of hardness values

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NOTES

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Australian Standard™

Metallic materials—Conversion of hardness values

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee MT-006, Mechanical Testing of Metals. It was approved on behalf of the Council of Standards Australia on 23 March 2004 and published on 27 May 2004.

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Australian Standard™

Metallic materials—Conversion of hardness values

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PREFACE

This Standard was prepared by Standards Australia Committee MT-006, Mechanical Testing of Metals.

This Standard is identical with and has been reproduced from ISO 18265:2003, *Metallic materials—Conversion of hardness values.*

This Standard is part of a series of hardness testing Standards covering the hardness testing of metallic materials. The series comprises of the following Standards:

AS

1815 Metallic materials—Rockwell hardness test (series)

1816 Metallic materials—Brinell hardness test (series)

1817 Metallic materials—Vickers hardness test (series)

5016 Metallic materials—Conversion of hardness values (this Standard)

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

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

(b) In the source text 'this International Standard' should read 'this Australian Standard'.

(c) A full point substitutes 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	
6506	Metallic materials—Brinell hardness test	1816	Metallic materials—Brinell hardness test
6506-1	Part 1: Test method	1816.1	Part 1: Test method
6507	Metallic materials—Vickers hardness test	1817	Metallic materials—Vickers hardness test
6507-1	Part 1: Test method	1817.1	Part 1: Test method
6507-2	Part 2: Verification of testing machines	1817.2	Part 1: Verification of testing machines
6508	Metallic materials—Rockwell hardness test	1815	Metallic materials—Rockwell hardness test
6508-1	Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)	1815.1	Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)
6508-2	Part 2: Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)	1815.2	Part 2: Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)
6892	Metallic materials—Tensile testing at ambient testing temperature	—	
7500	Metallic materials—Verification of static uniaxial testing machines	—	
7500-1	Part 1: Tension/compression testing machines—Verification and calibration of the force-measuring system		
9513	Metallic materials—Calibration of extensometers used in uniaxial testing	1545	Methods for the calibration and grading of extensometers

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An informative annex is only for ‘information’ and guidance.

CONTENTS

INTRODUCTION

The hardness conversion values given in Table A.1 were obtained in interlaboratory tests by the *Verein Deutscher Eisenhüttenleute* (VDEh) (German Iron and Steel Institute) using verified and calibrated hardness testing machines. Statistically reliable information cannot be given on the uncertainty of these values because the test conditions were not reproducible, and the number of results used to calculate the mean hardness values is not known. The conversion values in Table A.1 are in accordance with the information presented in IC No. 3 (1980) and IC No. 4 (1982) of the European Coal and Steel Community, as well as in ISO 4964:1984 and ISO/TR 10108:1989.

Annexes C, D and E contain — in a revised format — the extensive results on the conversion of hardness values presented in TGL 43212/02 to 43212/04, standards published by the former East German standards body, the *Amt für Standardisierung, Meßwesen und Warenprüfung* (ASMW). The values presented in Annex B had also been determined by the ASMW, but were published in a report of the *Physikalisch-Technische Bundesanstalt* (PTB) [1], the German national institute for science and technology, not in a TGL standard.

The converted hardness values in the above-mentioned TGL standards were obtained in statistically reliable hardness and tensile tests. The hardness tests were performed using ASMW normal testing machines on plane-parallel, polished specimens of various materials in different heat treatment conditions. Tensile strength was tested on machines whose force measuring and extension measuring systems had been calibrated immediately before testing. The tensile test method used is equivalent to that specified in ISO 6892, and the calibration procedures conform with those specified in ISO 7500-1 and ISO 9513.

Users of this International Standard should take note of Clause 3, especially the concluding warning.

NOTES

AUSTRALIAN STANDARD

Metallic materials — Conversion of hardness values

1 Scope

This International Standard specifies the principles of the conversion of hardness values and gives general information on the use of conversion tables.

The conversion tables in Annexes A to F apply to

— unalloyed and low-alloy steels and cast iron;

— steels for quenching and tempering;

— cold working steels;

— high speed steels;

— hardmetals;

— non-ferrous metals and alloys.

NOTE The conversion tables in Annexes B to E are based on empirical results which were evaluated by means of regression analysis. Such analysis was not possible in the case of the values given in Annex A because a sufficient number of results was not available.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6506-1:1999, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 6507-1:1997, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 6507-2:1997, *Metallic materials — Vickers hardness test — Part 2: Verification of testing machines*

ISO 6508-1:1999, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

ISO 6508-2:1999, *Metallic materials — Rockwell hardness test — Part 2: Verification and calibration of testing machines (scales A, B, C, D, E, F, G, H, K, N, T)*

ISO 6892:1998, *Metallic materials — Tensile testing at ambient temperature*

ISO 7500-1:—[1)], *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/ compression testing machines — Verification and calibration of the force-measuring system*

ISO 9513:1999, *Metallic materials — Calibration of extensometers used in uniaxial testing*

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1) To be published. (Revision of ISO 7500-1:1999)