AS 1817.1:2026
ISO 6507-1:2023

Australian STANDARD®

STANDARDS Australia

Metallic materials — Vickers hardness test

Part 1: Test method (ISO 6507-1:2023, IDT)



AS 1817.1:2026

This Australian Standard® was prepared by MT-006, Mechanical Testing Of Metals. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 10 December 2025.

This Standard was published on 13 February 2026.

The following are represented on Committee MT-006:

Australian Pipelines and Gas Association
Bureau of Steel Manufacturers of Australia
Materials Australia
National Association of Testing Authorities Australia
University of Technology Sydney
Weld Australia

This Standard was issued for comment as DR AS 1817.1:2025

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 products by visiting:

www.standards.org.au

ISBN: 978 1 76175 605 4

AS 1817.1:2026
ISO 6507-1:2023

Australian Standard®

Metallic materials — Vickers hardness test

Part 1: Test method (ISO 6507-1:2023, IDT)

First published in part as AS B106-1954.
Revised and redesignated AS B106.1-1962.
AS B106.2 first published 1965.
AS B106.1-1962 revised and redesignated AS 1817.1-1976.
AS B106.2-1965 revised and redesignated AS 1817.2-1976.
AS 1817.1-1976 and AS 1817.2-1976 revised, amalgamated and redesignated AS 1817-1991.
AS 1817-1991 revised and redesignated in part as AS 1817.1-2003.
Second edition 2026.

© ISO 2026 — All rights reserved
© Standards Australia Limited 2026

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).

How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee MT-006, Mechanical Testing Of Metals to supersede AS 1817.1:2003, *Metallic materials —Vickers hardness test, Method 1: Test method (ISO 6507-1:1997, MOD).*

The objective of this document is to specify the Vickers hardness test method for the three different ranges of test force for metallic materials, including hard metals and other cemented carbides, metallic coatings and other inorganic coatings.

This document is identical to, and has been reproduced from, ISO 6507-1:2023, *Metallic materials — Vickers hardness test — Part 1: Test method.*

As this document has been reproduced from an international document, a comma is to be read as a full point when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

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

© Standards Australia Limited 2026

Contents

Page

Preface ..... **v**

Foreword ..... **vii**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **2**

4 Symbols and designations **2**
4.1 Symbols and designations used in this document 2
4.2 Designation of hardness number 3

5 Principle **3**

6 Testing machine **4**
6.1 Testing machine 4
6.2 Indenter 4
6.3 Diagonal measuring system 4

7 Test piece **5**
7.1 Test surface 5
7.2 Preparation 5
7.3 Thickness 5
7.4 Tests on curved surfaces 5
7.5 Support of unstable test pieces 5
7.6 Metallic and other inorganic coatings 5

8 Procedure **6**
8.1 Test temperature 6
8.2 Test force 6
8.3 Periodic verification 6
8.4 Test piece support and orientation 6
8.5 Focus on test surface 7
8.6 Test force application 7
8.7 Prevention of the effect of shock or vibration 7
8.8 Minimum distance between adjacent indentations 7
8.9 Measurement of the diagonal length 8
8.10 Calculation of hardness value 8

9 Uncertainty of the results **8**

10 Test report **9**

Annex A (normative) **Minimum thickness of the test piece in relation to the test force and hardness** **10**

Annex B (normative) **Tables of correction factors for use in tests made on curved surfaces** **12**

Annex C (normative) **Procedure for periodic checking of the testing machine, diagonal measuring system and indenter by the user** **16**

Annex D (informative) **Uncertainty of the measured hardness values** **18**

Annex E (informative) **Vickers hardness measurement traceability** **25**

Annex F (informative) **CCM — Working group on hardness** **28**

Annex G (informative) **Adjustment of Köhler illumination systems** **29**

Annex H (normative) **Determining the Vickers hardness of metallic and other inorganic coatings** **30**

Bibliography **34**

© Standards Australia Limited 2026

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 3, *Hardness testing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 459, *ECISS - European Committee for Iron and Steel Standardization*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition of ISO 6507-1, together with ISO 4545-1:2023, cancels and replaces ISO 4516:2002, ISO 4545-1:2017 and ISO 6507-1:2018, which have been technically revised.

The main changes are as follows:

— Scope revised to include testing on metallic coatings and other inorganic coatings;

— added 7.6 - Metallic and other inorganic coatings;

— requirements have been added to the test report for reporting the surface curvature, if the curvature correction is applicable;

— added Annex H to cover coatings specific requirements;

— updated references.

A list of all parts in the ISO 6507 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© Standards Australia Limited 2026

Australian Standard®

Metallic materials — Vickers hardness test

Part 1: Test method (ISO 6507-1:2023, IDT)

1 Scope

This document specifies the Vickers hardness test method for the three different ranges of test force for metallic materials, including hard metals and other cemented carbides (see Table 1), metallic coatings and other inorganic coatings.

Table 1 — Ranges of test force

Ranges of test force, F N	Hardness symbol	Designation
$F \geq 49{,}03$	≥*HV* 5	Vickers hardness test
$1{,}961 \leq F < 49{,}03$	*HV* 0,2 to <*HV* 5	Low-force Vickers hardness test
$0{,}009\,807 \leq F < 1{,}961$	*HV* 0,001 to <*HV* 0,2	Vickers microhardness test

The Vickers hardness test is specified in this document for lengths of indentation diagonals between 0,020 mm and 1,400 mm. Using this method to determine Vickers hardness from smaller indentations is outside the scope of this document as results would suffer from large uncertainties due to the limitations of optical measurement and imperfections in tip geometry.

The Vickers hardness specified in this document is also applicable for metallic and other inorganic coatings including electrodeposited coatings, autocatalytic coatings, sprayed coatings and anodic coatings on aluminium.

This document is applicable to measurements normal to the coated surface and to measurements on cross-sections, provided that the characteristics of the coating (smoothness, thickness, etc.) permit accurate readings of the diagonal of the indentation.

This document is not applicable for coatings with thickness less than 0,030 mm when testing normal to the coating surface. This standard is not applicable for coatings with thickness less than 0,100 mm when testing a cross-section of the coating. ISO 14577-1 can be used for the determination of hardness from smaller indentations."

A periodic verification method is specified for routine checking of the testing machine in service by the user.

For specific materials and/or products, relevant International Standards exist.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 6507-2:2018, *Metallic materials — Vickers hardness test — Part 2: Verification and calibration of testing machines*

ISO 6507-3, *Metallic materials — Vickers hardness test — Part 3: Calibration of reference blocks*

© Standards Australia Limited 2026