



**International
Standard**

ISO 14577-3

**Metallic materials — Instrumented
indentation test for hardness and
materials parameters —**

**Part 3:
Calibration of reference blocks**

*Matériaux métalliques — Essai de pénétration instrumenté pour
la détermination de la dureté et de paramètres des matériaux —*

Partie 3: Étalonnage des blocs de référence

**Third edition
2026-05**

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Contents

| | Page |
|---|-----------|
| Foreword | iv |
| Introduction | v |
| 1 Scope | 1 |
| 2 Normative references | 1 |
| 3 Terms and definitions | 1 |
| 4 Manufacture of reference blocks | 1 |
| 5 Calibrating machine | 2 |
| 5.1 General..... | 2 |
| 5.2 Calibration of the test force..... | 3 |
| 5.3 Verification of the indenter..... | 3 |
| 5.3.1 General..... | 3 |
| 5.3.2 Vickers indenter..... | 3 |
| 5.3.3 Berkovich, modified Berkovich and corner cube indenters..... | 4 |
| 5.3.4 Ball indenters, and spheroconical indenters..... | 4 |
| 5.4 Calibration of the displacement measuring device..... | 4 |
| 5.5 Testing cycle requirements..... | 5 |
| 6 Calibration procedure | 5 |
| 7 Number of indentations | 6 |
| 8 Uniformity of the reference blocks | 6 |
| 9 Marking | 7 |
| 10 Validity | 8 |
| Annex A (informative) Example procedure for measuring elasticity of reference materials with pulse echo method with traceability | 9 |
| Bibliography | 11 |

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.

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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/SC 1, *Test methods for steel (other than chemical analysis)*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 14577-3:2015), which has been technically revised.

The main changes are as follows:

- Specification of the shape of the reference block.
- Modifications in the procedure for the verification of the indenter.
- Testing cycle requirements.
- Changing the conditions for the verification of the uniformity of the reference blocks.
- [Annex A](#) was added.

A list of all parts in the ISO 14577 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.

Introduction

Hardness has typically been defined as the resistance of a material to permanent penetration by another harder material. The results obtained when performing Rockwell, Vickers, and Brinell tests are determined after the test force has been removed. Therefore, the effect of elastic deformation under the indenter has been ignored.

ISO 14577 (all parts) has been prepared to enable the user to evaluate the indentation of materials by considering both the force and displacement during plastic and elastic deformation. By monitoring the complete cycle of increasing and removal of the test force, hardness values equivalent to traditional hardness values can be determined. More significantly, additional properties of the material such as its indentation modulus and elasto-plastic hardness can also be determined. All these values can be calculated without the requirement to measure the indent optically. Furthermore, by a variety of techniques, the instrumented indentation test allows to record hardness and modulus depth profiles within a, probably complex, indentation cycle.

ISO 14577 (all parts) has been written to allow a wide variety of post test data analysis.

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