



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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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.

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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.