

INTERNATIONAL STANDARD

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Metallic materials — Hardness test — Verification of Knoop hardness testing machines

*Matériaux métalliques — Essai de dureté — Contrôle des machines
d'essai de dureté Knoop*



Reference number
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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 4546 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Sub-Committee SC 3, *Hardness testing*.

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International Organization for Standardization

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Metallic materials — Hardness test — Verification of Knoop hardness testing machines

1 Scope

This International Standard specifies a method of verification of testing machines for determining Knoop hardness for metallic materials in accordance with ISO 4545. It covers test forces up to and including 9,807 N. The method is applicable only for indentations with diagonals $\geq 20 \mu\text{m}$.

This International Standard describes a direct verification method for checking the main functions of the machine, and an indirect verification method suitable for the overall checking of the machine. The indirect verification method may be used on its own for periodic routine checking of the machine in service.

If a testing machine is also to be used for other methods of hardness testing, it should be verified independently for each method.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4545:1993, *Metallic materials — Hardness test — Knoop test*.

ISO 4547:1993, *Metallic materials — Hardness test — Calibration of standardized blocks to be used for Knoop hardness testing machines*.

ISO 10250:—¹⁾, *Metallic materials — Hardness test — Tables of Knoop hardness values for use in tests made on flat surfaces*.

1) To be published.

3 General conditions

Before a Knoop hardness testing machine is verified, it shall be checked to ensure that

- the machine is properly set up;
- the plunger holding the indenter is capable of sliding in its guide without any appreciable clearance;
- the indenter holder is firmly mounted in the plunger;
- the test force can be applied and removed without shock or vibration and in such a manner that the readings are not influenced;
- the change in mode from removal of the test force to measuring mode does not influence the readings;
- the lighting system does not affect the readings;
- the centre of the indentation is in the centre of the field of view.

The illumination device of the measuring microscope shall provide uniform lighting of the entire observed field and maximum contrast between the indentation and the surrounding surface.

4 Direct verification

Direct verification involves

- verification of the test force;
- verification of the indenter;
- verification of the measuring device.