INTERNATIONAL STANDARD

ISO 1143

Second edition
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Metallic materials — Rotating bar bending fatigue testing

Matériaux métalliques — Essais de fatigue par flexion rotative de barreaux

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1143 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 5, *Fatigue testing*.

This second edition cancels and replaces the first edition (ISO 1143:1975), which has been technically revised.

Metallic materials — Rotating bar bending fatigue testing

1 Scope

This International Standard specifies the method for rotating bar bending fatigue testing of metallic materials. The tests are conducted at room temperature or elevated temperature in air, the specimen being rotated.

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 376, *Metallic materials — Calibration of force-proving instruments used for the verification of uniaxial testing machines*

ISO 1099, *Metallic materials — Fatigue testing — Axial force-controlled method*

ISO 12106, *Metallic materials — Fatigue testing — Axial-strain-controlled method*

ISO 12107, *Metallic materials — Fatigue testing — Statistical planning and analysis of data*

ISO 23718, *Metallic materials — Mechanical testing — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1099, ISO 12106, ISO 12107, ISO 23718 and the following apply.

3.1
fatigue
process of changes in properties which can occur in a metallic material due to the repeated application of stresses or strains and which can lead to cracking or failure

3.2
fatigue life
N_f
number of cycles of a specified character that a given specimen sustains before failure of a specified nature occurs

3.3
S-N **diagram**
diagram that shows the relationship between stress and fatigue life

3.4
bending moment
M
multiplication between force and force arm length