
**Rubber, vulcanized or thermoplastic —
Determination of dynamic properties —**

**Part 1:
General guidance**

*Caoutchouc vulcanisé ou thermoplastique — Détermination des
propriétés dynamiques —*

Partie 1: Lignes directrices





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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.

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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 4664-1 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 2, *Testing and analysis*.

This second edition cancels and replaces the first edition (ISO 4664-1:2005), which has been technically revised as follows:

- the test conditions given in Tables 2 and 3 have been modified;
- a number of equations and figures have been added for better comprehension of the text;
- the clause concerning calibration (Clause 7 in the previous edition) has been deleted.

ISO 4664 consists of the following parts, under the general title *Rubber, vulcanized or thermoplastic — Determination of dynamic properties*:

- *Part 1: General guidance*
- *Part 2: Torsion pendulum methods at low frequencies*

Rubber, vulcanized or thermoplastic — Determination of dynamic properties —

Part 1: General guidance

1 Scope

This part of ISO 4664 provides guidance on the determination of dynamic properties of vulcanized and thermoplastic rubbers. It includes both free- and forced-vibration methods carried out on both materials and products. It does not cover rebound resilience or cyclic tests in which the main objective is to fatigue the rubber.

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 815-1, *Rubber, vulcanized or thermoplastic — Determination of compression set — Part 1: At ambient or elevated temperatures*

ISO 7743:2011, *Rubber, vulcanized or thermoplastic — Determination of compression stress-strain properties*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Terms applying to any periodic deformation

3.1.1

mechanical hysteresis loop

closed curve representing successive stress-strain states of a material during a cyclic deformation

NOTE Loops can be centred around the origin of co-ordinates or more frequently displaced to various levels of strain or stress; in this case the shape of the loop becomes variously asymmetrical in more than one way, but this fact is frequently ignored.

3.1.2

energy loss

energy per unit volume which is lost in each deformation cycle, i.e. the hysteresis loop area

NOTE It is expressed in J/m³.