INTERNATIONAL STANDARD

ISO 3387

Third edition
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Rubber — Determination of crystallization effects by hardness measurements

Caoutchouc — Détermination des effets de la cristallisation au moyen de mesurages de dureté

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.

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 3387 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 2, *Testing and analysis*.

This third edition cancels and replaces the second edition (ISO 3387:1994), which has been technically revised. A calibration schedule has been added in Annex A and the normative references updated. It also incorporates the Technical Corrigendum ISO 3387:1994/Cor 1:2000.

Rubber — Determination of crystallization effects by hardness measurements

1 Scope

This International Standard specifies a test based on hardness measurements for determining the progressive stiffening of rubber with time, caused by crystallization. It is limited to materials having an initial hardness at a test temperature of from 10 IRHD to 85 IRHD.

The method is applicable to raw, unvulcanized (compounded) and vulcanized rubber. It is mainly of interest for rubber with a marked crystallization tendency at temperatures experienced in cold climates, such as chloroprene and natural rubber.

The method is not applicable to fast-crystallizing materials which crystallize to a considerable degree within the time-span of 15 min used for conditioning at test temperature.

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 48:2010, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 18899:2004, *Rubber — Guide to the calibration of test equipment*

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

3 Principle

One or the other of the following measurements is made on a test piece stored at the desired temperature:

a) the increase in hardness after a specified storage time;

b) the time required for a specified increase in hardness to occur.

4 Apparatus

4.1 Cold chamber, in accordance with ISO 23529, capable of being maintained within ± 2 °C of the specified temperature and using a gaseous heat-transfer medium.

As all final handling and measurements are to be made within the cold chamber, it shall be possible to perform these operations while the test piece temperature remains within the permissible variations. This can be done by providing suitable equipment which permits manipulation of materials within the chamber from the outside (for example, by means of handholes and gloves through the door or wall of the cabinet).

4.2 Hardness gauges, in accordance with ISO 48. Lubricants, if used, shall be of a type not causing friction in the instrument at test temperature.

4.3 Tweezers or tongs, for handling the test pieces.

4.4 Gloves, for handling the test equipment.