INTERNATIONAL STANDARD

ISO 2921

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Rubber, vulcanized — Determination of low-temperature retraction (TR test)

Caoutchouc vulcanisé — Détermination du retrait à basse température (essai TR)

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 2921 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 2, *Testing and analysis*.

This fifth edition cancels and replaces the fourth edition (ISO 2921:2005), which has been technically revised, mainly to include an annex specifying a calibration schedule for the apparatus used.

Rubber, vulcanized — Determination of low-temperature retraction (TR test)

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — Certain procedures specified in this International Standard might involve the use or generation of substances, or the generation of waste, that could constitute a local environmental hazard. Reference should be made to appropriate documentation on safe handling and disposal after use.

1 Scope

This International Standard specifies a method for the determination of the temperature-retraction characteristics of stretched vulcanized rubber.

This International Standard does not cover thermoplastic rubbers, as many thermoplastic elastomers have a yield point in the range of 5 % to 20 % elongation. This fact might affect the result when carrying out TR tests on thermoplastic rubbers, and the results obtained from such tests should be analysed with caution.

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 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

A test piece is stretched at standard laboratory temperature and then cooled to a sufficiently low temperature such that retraction does not occur upon removal of the stretching force. The stretching force is removed and the temperature increased at a uniform rate. The temperatures at which specified percentage retractions occur are determined.

4 Apparatus

4.1 Retraction apparatus, comprising the components specified in 4.2 to 4.8 (see also Figure 1).

4.2 Heat-transfer medium, liquid or gaseous, which remains fluid at the test temperature and which does not appreciably affect the material being tested, as prescribed in ISO 23529.

Gases may be employed as the heat-transfer medium provided the design of the apparatus is such that results obtained using them will duplicate those obtained with liquids.