INTERNATIONAL STANDARD

ISO 2007

Fifth edition
2018-07

Rubber, unvulcanized — Determination of plasticity — Rapid-plastimeter method

Caoutchouc non vulcanisé — Détermination de la plasticité — Méthode au plastomètre rapide

Reference number
ISO 2007:2018(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document 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 2007:2007), which has been technically revised.

The main changes compared to the previous edition are as follows:

— inclusion of the schematic diagram for the parallel-plate plastimeter and punch in 5.1 and 5.2;

— inclusion of heating device and temperature control system in Clause 5;

— inclusion of cigarette paper in Clause 5;

— change of test piece thickness in Clause 6;

— change of calibration requirement in Clause 7.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Rubber, unvulcanized — Determination of plasticity — Rapid-plastimeter method

WARNING 1 — Persons using this document should be familiar with normal laboratory practice. This document 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 determine applicability of any other restrictions.

WARNING 2 — Certain procedures specified in this document 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 document specifies a method for the rapid determination of the plasticity of raw rubber and unvulcanized compounded rubber. It is applicable to the determination of the plasticity retention index (PRI) as specified in ISO 2930.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1795, *Rubber, raw natural and raw synthetic — Sampling and further preparative procedures*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp/

3.1
plasticity number
measure of plasticity, based upon the height of a test piece after being subjected to deformation under specified conditions of compressive force, time and temperature

4 Principle

A disc-shaped test piece is compressed rapidly between small parallel platens to a fixed thickness of 1 mm. The test piece is maintained at this compression for 15 s to enable it to reach approximate temperature equilibrium with the platens. After this period, the test piece is subjected to a constant compressive force of 100 N ± 1 N for 15 s. Its thickness at the end of this period is taken as the measure of plasticity.

5 Apparatus

5.1 Parallel-plate plastimeter, consisting of the following elements:

5.1.1 Two parallel, circular platens, having smooth, flat surfaces, movable in relation to each other, both provided with suitable means of heating, and **a jacket** so that the material being tested and the area surrounding it can be maintained at the specified test temperature.

One of the two platens shall be a right cylinder of stainless steel and shall have one of the following diameters: 7,30 mm, 10,00 mm or 14,00 mm (tolerance ±0,02 mm), its effective depth shall be 4,50 mm ± 0,15 mm and care shall be taken to ensure that the edge of the working face is neither worn nor damaged. The diameter shall be selected so that the measured plasticity (see Clause 10) lies between 20 and 85. The other platen can be of chromium-plated brass or stainless steel and shall be of a larger diameter than the first platen. Its effective depth of inclusion within any heating jacket shall be 3,50 mm ± 0,25 mm. Figure 1 is a schematic diagram of the platens.

