
**Halogenated isobutene-isoprene
rubber (BIIR and CIIR) — Evaluation
procedures**

*Caoutchoucs isobutène-isoprène halogénés (BIIR et CIIR) — Méthodes
d'évaluation*

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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.

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This fifth edition cancels and replaces the fourth edition (ISO 7663:2005), which has been technically revised with the following changes:

- [Clause 2](#) has been updated;
- in [4.2](#), the method given in ISO 248-2 is now allowed;
- in [5.2.2.1](#), addition of a statement that the mixing with a laboratory internal mixer is the preferred procedure. Method B becomes "Single stage mixing with a laboratory internal mixer";
- in [5.2.2.3](#), advice on mixing with various sizes of laboratory internal mixer is given along with a general mixing procedure.

Halogenated isobutene-isoprene rubber (BIIR and CIIR) — Evaluation procedures

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International 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.

1 Scope

This International Standard specifies the following:

- physical and chemical tests on raw rubbers;
- standardized materials, a standardized test formulation, and the equipment and processing methods for evaluating the vulcanization characteristics of all types of halogenated isobutene-isoprene rubber (BIIR and CIIR).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 247, *Rubber — Determination of ash*

ISO 248-1, *Rubber, raw — Determination of volatile-matter content — Part 1: Hot-mill method and oven method*

ISO 248-2, *Rubber, raw — Determination of volatile-matter content — Part 2: Thermogravimetric methods using an automatic analyser with an infrared drying unit*

ISO 289-1, *Rubber, unvulcanized — Determinations using a shearing-disc viscometer — Part 1: Determination of Mooney viscosity*

ISO 1795:2007, *Rubber, raw natural and raw synthetic — Sampling and further preparative procedures*

ISO 2393, *Rubber test mixes — Preparation, mixing and vulcanization — Equipment and procedures*

ISO 3417, *Rubber — Measurement of vulcanization characteristics with the oscillating disc curemeter*

ISO 6502, *Rubber — Guide to the use of curemeters*

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

3 Sampling and further preparative procedures

- 3.1 Selection of the sample from the lot shall be in accordance with ISO 1795.
- 3.2 Take a laboratory sample of approximately 1,5 kg by the method described in ISO 1795.
- 3.3 Prepare test samples in accordance with ISO 1795.

4 Physical and chemical tests on raw rubber

4.1 Mooney viscosity

Prepare a test sample, without milling, in accordance with the preferred procedure in ISO 1795.

If milling is deemed necessary, either because of the condition of the laboratory sample (e.g. excessive porosity) or by agreement between the interested parties, it shall be performed in accordance with ISO 1795:2007, 7.3.2.2, paragraphs 1 and 2.

Determine the Mooney viscosity in accordance with ISO 289-1 on a test piece cut from the test sample which shall be as free as possible from air and pockets that may trap air against the rotor and die surface.

The viscosity shall be determined as ML(1+8) at 125 °C.

4.2 Volatile matter

Determine the volatile-matter content by the hot-mill method as specified in ISO 248-1 or by the method specified in ISO 248-2.

4.3 Ash

Determine the ash in accordance with either method A or method B of ISO 247.

5 Preparation of test mixes

5.1 Standard test formulation

The standard test formulation is given in [Table 1](#). The materials shall be national or international standard reference materials. If no standard reference material is available, the materials to be used shall be agreed by the parties concerned.

Table 1 — Standard test formulation for evaluation of halogenated isobutene-isoprene rubbers

Material	Parts by mass
Halogenated isobutene-isoprene rubber (BIIR or CIIR)	100,00
Stearic acid ^{a, b}	1,00
Industry reference black ^c	40,00
Zinc oxide ^{a, d}	5,00
Total	146,00

^a Use powder materials.
^b The standard reference material for stearic acid is specified in ISO 8312. Use class A.
^c Use the current industry reference black.
^d The standard reference material for zinc oxide is specified in ISO 9298. Use the indirect (French) process.

5.2 Procedure

5.2.1 Equipment and procedure

The equipment and procedure for the preparation, mixing and vulcanization shall be in accordance with ISO 2393.