

---

---

**Natural rubber (NR) — Evaluation  
procedure**

*Caoutchouc naturel (NR) — Méthode d'évaluation*



This document is a preview generated by EBS



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Sampling and further preparative procedures</b> .....	<b>1</b>
<b>4 Physical and chemical tests on raw rubber</b> .....	<b>2</b>
4.1 Mooney viscosity.....	2
4.2 Volatile-matter content.....	2
4.3 Other specifications on requirements.....	2
<b>5 Preparation of test mix</b> .....	<b>2</b>
5.1 General.....	2
5.2 Standard test formulae.....	2
5.3 Procedure.....	3
5.3.1 Equipment and procedure.....	3
5.3.2 Mill mixing procedure for formulae 1 and 2 (gum compounds).....	3
5.3.3 Mill mixing procedure for formulae 1 and 2 (gum compounds) using masterbatches.....	4
5.3.4 Mixing procedures for formula 3 (black-filled compound).....	4
<b>6 Evaluation of vulcanization characteristics by a curemeter test</b> .....	<b>8</b>
6.1 Using an oscillating-disc curemeter.....	8
6.2 Using a rotorless curemeter.....	8
<b>7 Evaluation of tensile stress-strain properties of vulcanized test mixes</b> .....	<b>9</b>
<b>8 Test report</b> .....	<b>9</b>
<b>Annex A (normative) Procedure for preparing gum compounds through use of masterbatches</b> .....	<b>10</b>
<b>Annex B (informative) Precision statement for both mill and internal mixer</b> .....	<b>12</b>
<b>Bibliography</b> .....	<b>17</b>

## 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](http://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](http://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 fourth edition cancels and replaces the third edition (ISO 1658:2009), of which it constitutes a minor revision to update the normative references (in [Clause 2](#) and throughout the text).

# Natural rubber (NR) — Evaluation procedure

**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.

## 1 Scope

This International Standard specifies

- physical and chemical tests on raw natural rubbers;
- standard materials, standard test formulae, equipment and processing methods for evaluating the vulcanization characteristics of natural rubber (NR).

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

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

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

ISO 2000:2014, *Rubber, raw natural — Guidelines for the specification of technically specified rubber (TSR)*

ISO 2007, *Rubber, unvulcanized — Determination of plasticity — Rapid-plastimeter method*

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** A laboratory sample of mass approximately 1,5 kg shall be prepared by the method described in ISO 1795.

**3.2** The rubber shall be homogenized in accordance with ISO 1795.

**3.3** Preparation of the test samples shall be in accordance with ISO 1795.