

This is a preview of "ISO 4662:2009". [Click here to purchase the full version from the ANSI store.](#)

Third edition
2009-08-15

Rubber, vulcanized or thermoplastic — Determination of rebound resilience

*Caoutchouc vulcanisé ou thermoplastique — Détermination
de la résilience de rebondissement*



Reference number
ISO 4662:2009(E)

© ISO 2009

This is a preview of "ISO 4662:2009". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO 4662:2009". [Click here to purchase the full version from the ANSI store.](#)

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle.....	2
5 Pendulum method	2
5.1 Apparatus	2
5.2 Test pieces	7
5.3 Temperature of test	8
5.4 Procedure	8
5.5 Precision.....	9
5.6 Test report.....	9
6 Tripsometer method	10
6.1 Apparatus	10
6.2 Test pieces	16
6.3 Temperature of test	17
6.4 Procedure	17
6.5 Precision.....	18
6.6 Test report.....	18
Annex A (informative) Use of non-standard test pieces	20
Annex B (informative) Apparatus designs	23
Annex C (informative) Mounting system for the disc of the tripsometer.....	24
Annex D (informative) Precision.....	26
Bibliography.....	30

This is a preview of "ISO 4662:2009". [Click here to purchase the full version from the ANSI store.](#)

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 4662 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 4662:1986), which has been technically revised. The main change is the incorporation of a second method using a tripsometer. This method gives generally similar results, but uses a smaller test piece. Reference is also made to ISO 23529, which has replaced ISO 471, ISO 3383 and ISO 4661-1.

This is a preview of "ISO 4662:2009". [Click here to purchase the full version from the ANSI store.](#)

Introduction

When rubber is deformed, an energy input is involved; part of which is returned when the rubber returns to its original shape. That part of the energy which is not returned as mechanical energy is dissipated as heat in the rubber.

The ratio of the energy returned to the energy applied is termed the resilience. When the deformation is an indentation due to a single impact, this ratio is termed the rebound resilience.

The value of the rebound resilience for a given material is not a fixed quantity, but varies with temperature, strain distribution (determined by the type of indenter and test piece and by their dimensions), strain rate (determined by the velocity of the indenter,), strain energy (determined by the mass and velocity of the indenter) and strain history. Strain history is particularly important in the case of filler-loaded polymers, where the stress-softening effect necessitates a mechanical conditioning.

This variation of resilience with conditions is an inherent property of polymers, which can therefore only be fully evaluated if tests are carried out over a wide range of conditions. The factors described may have a different quantitative influence on resilience. While temperature may critically affect resilience near transition regions of the material tested, factors connected with time and amplitude of indentation have only moderate effects, and fairly wide tolerances may be admissible for them.

Ideally, rebound resilience should be measured on a test piece the back surface of which is bonded to a rigid support in order to avoid friction losses due to slippage during the impact. Since the use of bonded test pieces is impractical in many applications, unbonded test pieces are used. Frictional losses are avoided by secure clamping of the test piece.

To approach these ideal conditions in a practical apparatus, it is necessary to put limitations upon the hardness (see ISO 48) of the rubber that may be tested: on the hard side to avoid unusual requirements of rigidity in the apparatus; on the soft side to avoid difficulties in clamping.

If a defined set of mechanical conditions and an appropriate apparatus are selected, a standard value of rebound resilience at any temperature can be obtained with a satisfactory degree of reproducibility.