



BSI Standards Publication

Rubber, vulcanized or thermoplastic — Determination of volume and/or surface resistivity

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National foreword

This British Standard is the UK implementation of ISO 14309:2011. It supersedes BS 903-C1:1991, also numbered as BS 2782-2:Method 231A:1991, and BS 903-C2:1982, also numbered as BS 2782-2:Method 230A:1982, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/22, Physical testing of rubber.

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 69661 9

ICS 83.060

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2011.

Amendments issued since publication

Date	Text affected
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Rubber, vulcanized or thermoplastic — Determination of volume and/or surface resistivity

*Caoutchouc vulcanisé ou thermoplastique — Détermination de la
résistivité transversale et/ou superficielle*





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Published in Switzerland

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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 14309 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 2, *Testing and analysis*.

Introduction

Rubber materials are widely used in many industries, either as the major material or forming a part of the product, because of their unique physical properties which can be tailored by compounding to match the particular requirements of the product specification. Although rubbers are generally regarded as insulating materials, they can be made electrically conductive or dissipative by compounding with a certain amount of carbon black or ionizable ingredients. Hence, the range of electrical resistance to be measured is very wide. It is difficult, however, to obtain high accuracy for measurements in the high-resistance range due to a number of factors.

In this International Standard, the guarded-electrode system is used to determine the resistivity of rubber test pieces since it is considered a good compromise between minimizing the errors by shunting away stray currents and using more unwieldy measurement instruments (see also IEC 60093).

ISO 1853, on the other hand, covers rubber materials with medium to low resistance, i.e. resistivities of $10^{10} \Omega\cdot\text{m}$ or below. It specifies three methods for determining volume resistivity which minimize or eliminate contact resistance.

The methods specified in this International Standard were originally designed for the determination of both surface and volume resistivity of insulating rubber materials, but their use can be extended to cover the range from high to low resistivity.

It is known that the test results are sensitive to the test conditions, such as temperature and humidity, and to heat and strain history.

