



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Rubber, vulcanized rubber - Determination of insulation
resistance**

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1 Scope

This Document specifies a method for the determination of the insulation resistance of vulcanized and thermoplastic rubbers without discrimination between the volume and surface resistances involved.

This method is applicable only to the test pieces with a resistance greater than 108ohm.

NOTE: Methods of test for test pieces with a lower resistance are described in ISO 1853 and ISO 2878.

Because the test pieces are simply and easily prepared, this method is particularly useful for rapidly determining values which will give a general indication of quality when great accuracy is not required.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest

version (including all the amendments) is applicable to this Document.

ISO 18899:2013 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:

3.1 Insulation resistance

< between two electrodes which are in contact with, or embedded in, a test piece> ratio of the direct voltage applied to the electrodes to the total current between them at a given time after the application of that voltage

NOTE 1: It is dependent upon both the volume and surface resistances of the test piece and is a function of the shape of the test piece.

4 Test Equipment

The insulation resistance shall be determined by measuring the current and voltage. Brief descriptions of suitable equipment are given in IEC 62631-3-3.

Suitable equipment shall be provided to supply a voltage of (500 +/- 10) V D.C., which is steady enough so that the charging current appearing when the voltage varies is negligible compared with the current flowing through the test piece.

5 Calibration

The test apparatus shall be calibrated in accordance with the schedule given in Annex B.

6.1 General

The electrodes shall be made of such a material that they will not corrode under the conditions of test or react with the material being tested. Suitable electrodes are described in 6.2 and 6.3.

6.2 Conducting-paint electrodes (for flat plates, tubes and rods)

Conducting paint such as conductive silver or colloidal graphite with a surface resistance of less than 100 ohm may be used as an electrode material (see IEC 62631-3-1). The liquid phase of the conducting paint shall be of such a nature that it will not have any effect on the insulation resistance to be measured.

Apply two equidistant strips of conducting paint approximately 1 mm wide around tubes and

RX - is the measured insulation resistance, in megaohms.

10 Test Report

The test report shall include the following information:

a) sample details:

1) a full description of the sample and its origin, 2) the method of preparation of the test pieces from the sample, for example moulded or cut;

b) test method:

1) a full reference to the test method used, i.e., the number of this Document, 2) the type of test piece used;

c) test details:

1) the laboratory temperature and humidity, 2) the number of test pieces used, 3) the time, temperature and humidity of conditioning prior to the test, 4) the type of electrode used, including the nature of the conducting paint, if used, 5) details of any test piece cleaning procedure used, 6) the test voltage, 7) the time of electrification, 8) details of any procedure not specified in this document;

d) test results:

Annex B (Normative) Calibration Schedule

B.1 Inspection Before any calibration is undertaken, the condition of the items to be calibrated shall be ascertained by inspection and recorded on any calibration report or certificate. It shall be reported whether calibration is made in the "as-received" condition or after rectification of any abnormality or fault.

It shall be ascertained that the apparatus is generally fit for the intended purpose, including any parameters specified as approximate and for which the apparatus is not required to be formally calibrated. If such parameters are liable to change, then the need for periodic checks shall be written into the detailed calibration procedures.

B.2 Schedule Verification/calibration of the test apparatus is a normative part of this document. The frequency of calibration and the procedures used are, unless otherwise stated, at the discretion of the individual laboratory using ISO 18899:2013 for guidance.

The calibration schedule given in Table B.1 has been compiled by listing all of the parameters specified in the test method for the apparatus, together with the specified requirement. A parameter and requirement can relate to the main test apparatus, part of that apparatus or to an ancillary apparatus necessary for the test.

For each parameter, a calibration procedure is indicated by reference to ISO 18899:2013,