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BRITISH STANDARD

METHODS OF TESTING VULCANIZED RUBBER

PART A2. DETERMINATION OF TENSILE STRESS-STRAIN PROPERTIES

BS 903 : Part A2 : 1971

Price 50p net

BRITISH STANDARDS INSTITUTION

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The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 5000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook. The BS Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

BS 907. Dial gauges for linear measurements.
BS 1610. Methods for the load verification of testing machines.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this standard:
Committee references RUC/10 and RUC/10/4
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CO-OPERATING ORGANIZATIONS

The Rubber Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

British Association of Synthetic Rubber Manufacturers
*British Rubber Manufacturers' Association Ltd.
*Department of Trade and Industry
*Natural Rubber Producers' Research Association
*Rubber and Plastics Research Association of Great Britain
Rubber Growers' Association
*Society of Motor Manufacturers and Traders Ltd.
Tyre Manufacturers' Conference

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

British Railways Board
British Rubber and Resin Adhesive Manufacturers' Association
British Society of Rheology
Chemical Industries Association
Electrical Research Association
Institution of Mechanical Engineers
Institution of Mechanical Engineers (Automobile Division)
Institution of Municipal Engineers
Institution of Water Engineers
Ministry of Defence (Army Department)
Ministry of Defence (Navy Department)
Ministry of Housing and Local Government
National College of Rubber Technology
National Physical Laboratory (Department of Trade and Industry)
Post Office
Royal Institute of Chemistry

BRITISH STANDARD

METHODS OF TESTING VULCANIZED RUBBER

Part A2. Determination of tensile stress-strain properties

FOREWORD

This British Standard has been published under the authority of the Rubber Industry Standards Committee.

The present revision has been undertaken in order to align the method with that described in the second (1968) edition of ISO Recommendation R 37, ' Determination of tensile stress-strain properties of vulcanized rubber '.

Two types of dumb-bell are described, Type 1 and a smaller Type 2. The former is similar to the Type D dumb-bell introduced in the 1956 edition of this standard and the latter to the Type E introduced by the 1961 amendments to that edition. However, it has been found possible to make the dimensional tolerances for these dumb-bells rather less stringent.

METHOD

1. SCOPE

This Part of this British Standard describes a method of test in which standard test pieces, either dumb-bells or rings, are stretched in a tensile testing machine at a constant rate of traverse of the driven grip or pulley.

Readings of force and elongation are taken as required during the uninterrupted stretching of the test piece and when it breaks.

Dumb-bell and ring test pieces do not necessarily give the same values for the stress-strain properties. This is mainly because in stretched rings the stress is not uniform over the cross section. A second factor is the existence of ' grain ', which may cause dumb-bells to give different values according to whether their length is parallel or at right angles to the grain.

The main points to be noted in choosing between rings and dumb-bells are as follows:

(1) *Tensile strength.* Rings give lower, sometimes much lower, values than dumb-bells, the latter being nearer to the true tensile strength of the rubber. The estimation of true tensile strength from ring data involves extrapolation of