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Methods of testing vulcanized rubber

Part A9: Determination of abrasion resistance — Akron and Taber methods

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Summary of pages
This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 12, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 903 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 November 2020. It was prepared by Technical Committee PRI/22, *Testing and analysis of rubber*. A list of organizations represented on this committee can be obtained on request to the committee manager.

Supersession

This part of BS 903 supersedes BS 903-A9:1988, which is withdrawn.

Information about this document

This is a full revision of the standard, and introduces the following principal changes.

- The number of methods described has been reduced from four to two: the rotating cylindrical drum method and the Du Pont method have been removed.
- The standard rubber for use with the rotating cylindrical drum method has been removed.
- Reference is made to BS ISO 23794 for comparison of methods.

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Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this document are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

Abrasion resistance of rubber is an important technological property but no single abrasion test method can simulate the various conditions that rubber products can be subjected to in service. A considerable number of abrasion tests have been developed and many of them are given in BS ISO 23794. BS ISO 23794 also outlines the different wear mechanisms and the significance of the various abradants and test conditions.

This British Standard describes two methods using apparatus commonly referred to as the Akron abrader and Taber abraser. The Akron machine uses wheel on wheel geometry and is notable for the ability to vary the degree of slip by changing the relative angle of the wheels. The Taber abraser uses a pair of wheels in contact with a driven flat disc test piece. Its notable features are that the force on the wheels and the nature of the abradant can easily be varied and the test can be carried out in the presence of liquids.

1 Scope

This part of BS 903 describes two methods (Method A: Akron method and Method B: Taber method) for determining the abrasion resistance of rubber by comparing the wear of the rubber under test with that of a standard rubber under the same conditions.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document. For dated references, only the edition cited applies.[1)] For undated references, the latest edition of the referenced document (including any amendments) applies.

BS ISO 525, *Bonded abrasive products – Shape types, designation and marking*

BS ISO 2393, *Rubber test mixes – Preparation, mixing and vulcanization – Equipment and procedures*

BS ISO 2781:2018, *Rubber, vulcanized or thermoplastic – Determination of density*

BS ISO 23529, *Rubber – General procedures for preparing and conditioning test pieces for physical test methods*

BS ISO 23794, *Rubber, vulcanized or thermoplastic – Abrasion testing – Guidance*

3 Terms and definitions

For the purposes of this part of BS 903, the terms and definitions given in BS ISO 23794 apply.

4 Standard reference compounds

The standard reference compound to be used in a test shall be one of those listed in Table 1. The mixing and vulcanization procedures shall conform to BS ISO 2393.

NOTE 1 S2 is identical to the standard rubber specified in BS ISO 4649:2017, B.2. It replaces standard rubber A (tyre-tread type) in BS 903-A9:1957. S3 is a high abrasion resistance compound based on synthetic rubber and may be preferred when highly resistant rubbers are being evaluated. S4 is a rubber of low abrasion resistance and may be preferred when less resistant rubbers are being evaluated. It replaces standard rubber B (sole and heel type) in BS 903-A9:1957.

[1)] Documents that are referred to solely in an informative manner are listed in the Bibliography.

