

Physical testing of rubber —

Part A43: Method for determination of resistance to ozone cracking (static strain test)

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Rubber Standards Policy Committee (RUM/-) to Technical Committee RUM/36, upon which the following bodies were represented:

- BP Chemicals Ltd.
- British Railways Board
- British Rubber Manufacturers' Association
- GAMBICA (BEAMA Ltd.)
- Institution of Mechanical Engineers
- Institution of Water and Environmental Management
- Malaysian Rubber Producers' Research Association
- Ministry of Defence
- RAPRA Technology Ltd.
- SATRA Footwear Technology Centre

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
1 Scope	1
2 Normative references	1
3 Definitions	1
4 Principle	1
5 Apparatus	1
6 Test piece	3
7 Conditioning	4
8 Test conditions	4
9 Test procedure	5
10 Expression of results	6
11 Test report	6
Annex A Explanatory notes	8
Figure 1 — Schematic diagram of the apparatus	2
Figure 2 — Path of test piece and swept area (shaded)	3
Figure 3 — Dumb-bell test piece	4
Figure 4 — Results in graphic form	7
Publications referred to	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Rubber Standards Policy Committee. This revision of Part A43 is identical with ISO 1431-1:1989 “*Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static strain test*,” published by the International Organization for Standardization (ISO). This Part of BS 903 supersedes BS 903:1982 which is withdrawn.

The generic title of BS 903 has been changed to “Physical testing of rubber” as many of the methods in the BS 903-A series are suitable for testing thermoplastic as well as vulcanized rubber. The change of title also anticipates the transfer of the methods in the Part B series to a separate standard for the chemical testing of rubber and the omission of the words “*Methods for*” anticipates the publication of a Part 0 “*Introduction*” and a “*Guide to the selection and use of methods of test*.” Amendments are not being issued to the other Parts of BS 903, but their titles are being changed when these Parts are revised.

The major changes incorporated in this revision are as follows.

- a) Provision has been made for conducting tests, if required, at a velocity of flow of ozonized air of 600 ± 100 mm/s (see 5.5).
- b) An alternative dumb-bell test piece has been added (see 6.3).
- c) An ozone concentration of 100 ± 10 parts of ozone per hundred million parts of air by volume (pphm) has been included as one of the alternative test conditions (see 8.1).

WARNING NOTE ON TOXICITY

Attention is drawn to the warning in clause 5. The recommendation that 10 pphm be regarded as an absolute maximum concentration in the surrounding atmosphere is in accordance with the value given for long term exposure (8 h TWA, Time Weighted Average, reference period) in Guidance Note EH 40/90 “*Occupational exposure limits*” published by the Health and Safety Executive, i.e. 0.1 ppm.

NOTE Guidance Note EH 40/90 expresses occupational exposure limits in parts of ozone per million parts of air by volume (ppm). Units of pphm are used throughout this standard since this is normal practice in the rubber industry.

Attention is also drawn to Guidance Note EH 38/83, “*Ozone health hazards and precautionary measures*.”

Cross-references

International standard	Corresponding British Standard
ISO 471:1983	BS 903 Methods of testing vulcanized rubber Part A35:1985 Temperatures, humidities and times for conditioning and testing of test pieces (Identical)
ISO 1431-2:1982	Part A44:1983 Determination of resistance to ozone cracking (dynamic strain test) (Identical)
ISO 4661-1:1986	Part A36:1988 Preparation of samples and test pieces (Identical)

It is intended that the international standard for the reference method for estimating the ozone concentration (ISO 1431-3, as referred to in clause 1 and in 5.4), at present in preparation, will be implemented as a British Standard as BS 903-A45. Until the reference method for estimating the ozone concentration is published, any suitable titrimetric or instrumental method may be used, although it will not be possible to calibrate such methods against the reference method. It is emphasized that details of the method of estimation of ozone concentration should be included in the test report [see item c) 1] of clause 11).

Additional information. In UK practice, the standard temperature is 23 °C (see clause 7.1), and is commonly referred to as the “standard laboratory temperature”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.