STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1683.24–2001
Methods of test for rubber
Method 24: Determination of the resistance of vulcanized or thermoplastic rubbers to ozone cracking–Static strain test

RECONFIRMATION NOTICE

Major stakeholders of this publication have reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 29 August 2018.

NOTES

AS 1683.24—2001
ISO 1431-1:1989
Reconfirmed 2018

Australian Standard™

Methods of test for elastomers

Method 24: Determination of the resistance of vulcanized or thermoplastic rubbers to ozone cracking—Static strain test

PREFACE

This Standard was prepared by the Standards Australia Committee RU-003, Analysis and Testing of Elastomers to supersede AS 1683.24—1984, *Methods of test for rubbers,* Method 24: *Rubber—Vulcanized—Determination of resistance to ozone cracking—Static strain test*.

The objective of this Standard is to provide manufacturers and users of elastomeric materials with a method for determining the resistance of vulcanized or thermoplastic rubbers to cracking when exposed, under static tensile strain, to air containing ozone.

This Standard is identical with and has been reproduced from ISO 1431.1:1989, *Rubber, vulcanized or thermoplastic—Resistance to ozone cracking* Part 1: *Static strain test.*

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, 'this part of ISO 1431' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to international Standards should be replaced by equivalent Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
471	Rubber—Standard temperatures, humidities and times for the conditioning and test pieces	1683 1683.20	Methods of test for elastomers Method 20: Standard temperatures, humidities and times for conditioning and testing
1431 1431-2	Rubber, vulcanized—Resistance to ozone cracking Part 2: Dynamic strain test	1683.25	Method 25: Determination of the resistance of vulcanized or thermoplastic rubber to ozone cracking—Dynamic strain test
4661	Rubber, vulcanized or thermoplastic—Preparation of samples and test pieces	—	
4661-1	Part 1: Physical test	—	

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1 Scope

This part of ISO 1431 specifies a method for the determination of resistance of vulcanized or thermoplastic rubbers to cracking when exposed, under static tensile strain, to air containing a definite concentration of ozone and at a definite temperature in circumstances that exclude the effects of direct light.

Great caution is necessary in attempting to relate standard test results to service performance since the relative ozone resistance of different rubbers can vary markedly according to conditions, especially ozone concentration and temperature. In addition, tests are carried out on thin test pieces deformed in tension and the significance of attack for articles in service may be quite different owing to the effects of size and the type and magnitude of deformation. Explanatory notes on the nature of ozone cracking are given in annex A.

Methods for determining resistance to ozone cracking under dynamic strain conditions and combined dynamic and static strain conditions are specified in ISO 1431-2. A reference method for estimating the ozone concentration will form the subject of ISO 1431-3.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1431. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 1431 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 471 : 1983, *Rubber — Standard temperatures, humidities and times for the conditioning and testing of test pieces.*

ISO 1431-2 : 1982, *Rubber, vulcanized — Resistance to ozone cracking — Part 2: Dynamic strain test.*

ISO 4661-1 : 1986, *Rubber, vulcanized — Preparation of samples and test pieces — Part 1: Physical tests.*

3 Definitions

For the purpose of this part of ISO 1431, the following definitions apply.

3.1 threshold strain: The highest tensile strain at which a rubber can be exposed at a given temperature to air containing a given concentration of ozone without ozone cracks developing on it after a given exposure period.

Threshold strain must be distinguished from limiting threshold strain, defined in 3.2.

3.2 limiting threshold strain: The tensile strain below which the time required for the development of ozone cracks increases very markedly and can become virtually infinite.

4 Principle

Test pieces are exposed under static tensile strain, in a closed chamber at a constant temperature, to an atmosphere containing a fixed concentration of ozone. The test pieces are examined periodically for cracking.

Three alternative evaluation procedures are described for selected values of ozone concentration and exposure temperature:

A Determination of the presence or absence of cracks, and if required, an estimate of the degree of cracking, after exposure for a fixed period of time at a given strain.

B Determination of time to the first appearance of cracks at any given strain.

C Determination of the threshold strain for any given exposure period.