Australian Standard™

Methods of test for elastomers

Method 16.2: Determinations using a shearing-disc viscometer—Determination of pre-vulcanizing characteristics

PREFACE

This Standard was prepared by the Standards Australia Committee RU-003, Analysis and Testing of Elastomers to supersede in part AS 1683.16—1981, *Methods of test for rubber*, Method 16: *Natural and synthetic rubbers—Determination of viscosity and scorch characteristics by shearing disc (Mooney) viscometer*.

The objective of this Standard is to provide manufacturers and users of elastomeric materials with a method for the determination of the pre-vulcanization characteristics of compounded rubbers.

This Standard is identical with and has been reproduced from ISO 289-2:1994, *Rubber, unvulcanized—Determinations using a shearing-disc viscometer*, Part 2: *Determination of pre-vulcanization characteristics.*

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 289' 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	
289	Rubber, unvulcanized—Determinations using a shearing-disc viscometer	1683	Methods of test for elastomers
289-1	Part 1: Determination of Mooney viscosity	1683.16.1	Method 16.1: Determinations using a shearing-disc viscometer—Determination of Mooney viscosity
TR 9272	Rubber and rubber products—Determination of precision for test method standards	—	

NOTES

1 Scope

This part of ISO 289 specifies a method for determining the pre-vulcanization characteristics of compounded rubber.

The pre-vulcanization characteristics determined by this method provide a means of estimating how long compounded rubber can be maintained at high temperatures and remain processable.

NOTE 1 No method of test can be expected to correlate with all the different types of processing conditions such as are found in mixing, calendering, extrusion and moulding. Therefore it is necessary to consider previous experience with a particular process when interpreting the results.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 289. 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 289 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 289-1:1994, *Rubber, unvulcanized — Determinations using a shearing-disc viscometer — Part 1: Determination of Mooney viscosity.*

ISO/TR 9272:1986, *Rubber and rubber products — Determination of precision for test method standards*

3 Definition

For the purposes of this part of ISO 289, the following definition applies.

3.1 pre-vulcanization time; scorch time: The time in minutes, including warm-up time, for the viscosity to increase by a specified amount from the minimum value. When a large rotor is used, the increase is specified as five units and when a small rotor is used, the increase is specified as three units. The corresponding pre-vulcanization times are designated t_5 and t_3, respectively.

4 Principle

The test consists of determining how the Mooney viscosity of the rubber compound changes with running time at a specified temperature relevant to the process for which the compound is to be used. The time at which the Mooney viscosity has increased by a specified number of units is recorded.

5 Apparatus

The apparatus specified in ISO 289-1 shall be used. It is permissible to use the small rotor for high-viscosity compounds.

6 Preparation of test specimen

Prepare the two discs comprising the test specimen from a sheet of rubber compound, using the pro-