First edition
2007-08-01

Rubber, vulcanized — Determination of temperature rise and resistance to fatigue in flexometer testing —

Part 4: Constant-stress flexometer

Caoutchouc vulcanisé — Détermination de l'élévation de température et de la résistance à la fatigue dans les essais aux flexomètres —

Partie 4: Flexomètre à contrainte constante

Reference number
ISO 4666-4:2007(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

ISO 4666-4 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 2, *Testing and analysis*.

ISO 4666 consists of the following parts, under the general title *Rubber, vulcanized — Determination of temperature rise and resistance to fatigue in flexometer testing*:

— *Part 1: Basic principles*

— *Part 2: Rotary flexometer*

— *Part 3: Compression flexometer*

— *Part 4: Constant-stress flexometer*

Introduction

This part of ISO 4666 describes a method of compression flexometer testing with constant-stress dynamic loading. The features and usefulness of constant-stress flexometer testing are as follows:

a) In order to exactly simulate the behaviour of a rubber product in use, an important consideration is where the temperature is measured. The constant-stress flexometer measures the temperature directly at the centre of the inside of the test piece (the source of heat generation), using a device as shown in Figure 4 of this part of ISO 4666, while in Part 3 of this International Standard the temperature is measured on the surface of the test piece.

b) A servo control system based on real-time feedback of the strain or stress is used to enable the measurement of dynamic properties (viscoelastic parameters) of the rubber as a function of time during the test run.

c) The accumulation of feedback information allows the detection of an initial stage, or the first signs of breakdown due to heat generation, which was once thought to be very difficult.

It has been reported [1] how well the rise in tyre temperature correlates with the temperature rise in the constant-stress flexometer test in comparison with the result from the method in Part 3 of this International Standard.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning the flexometer specified in Clause 5.

ISO takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from:

Bridgestone Corporation, 3-1-1 Ogawahigashi-Cho, Kodaira-Shi, Tokyo 187-8531, Japan.

Attention is drawn to the possibility that some elements of this document may be the subject of patent rights other than those identified above. ISO shall not be held responsible for identifying any or all such patent rights.