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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Rubber, vulcanized or thermoplastic — Determination of compression stress relaxation (rings)

Caoutchouc vulcanisé ou thermoplastique — Détermination de la relaxation de contrainte en compression (anneaux)

Reference number
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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6056 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 6056 : 1980), of which it constitutes a minor revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Rubber, vulcanized or thermoplastic — Determination of compression stress relaxation (rings)

1 Scope and field of application

This International Standard specifies three methods for determining the decrease in counterforce exerted by a ring-shaped test piece of vulcanized or thermoplastic rubber which has been compressed to a constant deformation and maintained thus at a predetermined test temperature. The methods are particularly suitable for the determination of stress relaxation in liquid environments.

In method A, the compression is applied, and all counterforce measurements are made, at the test temperature.

In method B, the compression is applied, and all counterforce measurements are made, at standard laboratory temperature.

In method C, the compression is applied at standard laboratory temperature and all counterforce measurements are made at the test temperature.

An alternative method, using cylindrical test pieces, is specified in ISO 3384.

NOTES

1 The three methods, A, B, and C, of carrying out the measurement do not give the same values of stress relaxation and comparison of values obtained from the three methods must be avoided. The method selected for use depends on the purpose of the test.

2 Testing at temperatures below standard laboratory temperature is not specified. The methods have been used for low temperature testing, but their reliability under these conditions is not proven.

2 References

ISO 37, *Rubber, vulcanized — Determination of tensile stress-strain properties.*

ISO 468, *Surface roughness — Parameters, their values and general rules for specifying surfaces.*

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

ISO 1817, *Rubber, vulcanized — Determination of the effects of liquids.*

ISO 1826, *Rubber, vulcanized — Time-interval between vulcanization and testing — Specification.*

ISO 3383, *Rubber — General directions for achieving elevated or sub-normal temperatures for tests.*

ISO 3384, *Rubber, vulcanized — Determination of stress relaxation in compression at ambient and at elevated temperatures.*

ISO 3601-1, *Fluid systems — O-rings — Part 1: Inside diameters, cross-sections, tolerances and size identification code.*

ISO 4648, *Rubber, vulcanized or thermoplastic — Determination of dimensions of test pieces and products for test purposes.*

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

3 Definition

compression stress relaxation: The reduction in compressive force, expressed as a percentage of the initial force, which occurs with time after the application of a constant compressive strain.

4 Apparatus

4.1 Compression device, consisting of two parallel, flat, highly polished, chromium plated or stainless steel plates, between the faces of which the test pieces are compressed.

The finish of the surface of the compression plates shall not be worse than 0,2 μm centre line average (see ISO 468). The plates shall be sufficiently rigid to withstand the stress without bending and of size sufficient to ensure that the whole of the compressed test piece is within the area of the plates.

The plates shall have holes of at least 2 mm diameter drilled through their centre portions to allow equalization of pressure and circulation of fluid inside the ring-shaped test pieces.