International Standard 3386/1

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Polymeric materials, cellular flexible — Determination of stress-strain characteristic in compression — Part 1 : Low-density materials

Matériaux polymères alvéolaires souples — Détermination de la caractéristique de contrainte-déformation relative en compression — Partie 1 : Matériaux à basse masse volumique

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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 3386/1 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 3386/1-1979), 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.

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Polymeric materials, cellular flexible — Determination of stress-strain characteristic in compression — Part 1 : Low-density materials

1 Scope and field of application

This part of ISO 3386 specifies a method for the determination of the compression stress/strain characteristic of low-density flexible cellular materials up to 250 kg/m^3. It also indicates a method for the calculation of the compression stress value of such materials.

The compression stress/strain characteristic is a measure of the load-bearing properties of the material, though not necessarily of its capacity to sustain a long-term load.

The compression stress/strain characteristic differs from the indentation hardness characteristics (as determined in accordance with ISO 2439), which are known to be influenced by the thickness and the tensile properties of the flexible cellular material under test, by the shape of the compression plate and by the shape and size of the test piece.

ISO 3386/2 specifies a method for high-density materials and differs from part 1 in the following ways:

— it is mainly concerned with materials of density above 250 kg/m^3;

— compression stress values have been deleted;

— it does not permit the use of a cylindrical test piece.

2 References

ISO 1923, *Cellular materials — Determination of linear dimensions.*

ISO 2439, *Polymeric materials, cellular flexible — Determination of hardness (indentation technique).*

3 Definitions

For the purposes of this International Standard the following definitions apply.

3.1 compression stress/strain characteristic (CC): The stress, expressed in kilopascals*, required to produce a compression, at a constant rate of deformation during the fourth loading cycle of the test specified below, expressed as a function of the compression.

3.2 compression stress value (CV_{40}): The compression stress/strain characteristic for a compression of 40 %.

4 Apparatus

4.1 Test machine

The test machine shall be capable of compressing the test piece between a support surface (see 4.2) and a compression plate (see 4.3), which shall have a uniform relative rate of motion in the vertical direction of 100 ± 20 mm/min.

The test machine shall be capable of measuring the force required to produce the specified compression with a precision of ± 2 % and of measuring the test piece thickness under load with a precision of ± 0,2 mm. Autographic recording of the stress-strain values is preferred.

4.2 Supporting surface

Unless otherwise specified, the test piece shall be supported on a smooth, flat, horizontal and rigid surface, larger than the test piece, which may be vented with holes about 6 mm in diam-

* 1 kPa = 10^3 N/m^2