
International Standard



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**Flexible cellular materials — Determination of
compression stress/strain characteristic and compression
stress value —
Part 1 : Low density materials**

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

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Descriptors : flexible cellular materials, tests, compression tests, test specimens.

Flexible cellular materials — Determination of compression stress/strain characteristic and compression stress value —

Part 1 : Low density materials

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the compression stress/strain characteristic and compression stress value of low density flexible cellular materials up to 250 kg/m³.

NOTE — It is intended to develop a method for high density flexible cellular materials as a part 2 of this International Standard.

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 characteristic (as determined in accordance with ISO 2439, *Flexible cellular materials — Hardness testing by indentation techniques*), 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.

2 REFERENCE

ISO 1923, *Cellular materials — Determination of linear dimensions*.¹⁾

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. It shall be equipped for making autographic load/compression plots.

NOTE — Most commercially available test machines measure the thickness with a precision of ± 0,5 mm.

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 diameter, and approximately 20 mm pitch, to allow the escape of air from below the test piece.

4.3 Compression plate

The compression plate shall be of any convenient size and shape, provided that it overlaps the test piece in all directions. The lower surface shall be plane and smooth, but not polished, and it shall be maintained parallel to the supporting surface.

1) At present at the stage of draft. (Revision of ISO 1923-1972 and ISO/R 1794-1971.)