

ORIGINAL

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Textiles —

**Determination of linear
density by the gravimetric
method and vibroscope
method**

The European Standard EN ISO 1973: 1995 has the status of a
British Standard.

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Textile fibres — Determination of linear density — Gravimetric method and vibroscope method

1 Scope

This International Standard specifies a gravimetric method and a vibroscope method for the determination of the linear density of textile fibres applicable respectively to:

- a) bundles of fibres;
- b) individual fibres.

Useful data can be obtained on man-made fibres and, with less precision, on natural fibres.

The procedures can be applied only to fibres which can be kept straight and, in the case of bundles, parallel, during test preparation. These methods are properly applicable when the fibres are readily freed of crimp. They are not applicable to tapered fibres.

NOTE 1 The vibroscope method may not be applicable to hollow and flat (ribbon-like) fibres.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 139:1973, *Textiles — Standard atmospheres for conditioning and testing*.

ISO 1130:1975, *Textile fibres — Some methods of sampling for testing*.

ISO 6989:1981, *Textile fibres — Determination of length and length distribution of staple fibres (by measurement of single fibres)*.

3 Definitions

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

3.1 tension: Force tending to cause the extension of a body.

NOTE 2 In textile testing, the tension applied is based on the linear density or cross-sectional area.

3.2 tensioning force: Force effective on a fibre specimen during the vibroscope test.

4 Principle

Two methods for determining linear density are described:

4.1 Gravimetric method (direct method by weighing), for bundles of fibres

Specimens of a given length are weighed on a balance. This method is applicable to bundles of fibres.

4.2 Vibroscope method, for individual fibres

Individual fibres of a given length and under specified tension are subjected to vibration at resonance frequency. The linear density is determined from the conditions of the resonance state, i.e. the resonance frequency, the length of the fibre and the tensioning force. The linear density is read directly on the scale of the vibroscope apparatus. This method assumes that the linear density of the tested length of the fibre is constant.