

Method for

Determination of length and length distribution of staple fibres by measurement of single fibres

[ISO title: Textile fibres — Determination of length and length
distribution of staple fibres (by measurement of single fibres)]

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The Fibres, Yarns and Fabrics Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following:

- Association of Jute Spinners and Manufacturers
- British Man-made Fibres Federation*
- British Nonwoven Manufacturers' Association
- British Railways Board
- British Textile Employers' Association*
- Central Council of the Irish Linen Industry
- Consumer Standards Advisory Committee of BSI
- Department of Industry (Chemicals and Textiles)
- Institute of Purchasing and Supply
- International Wool Secretariat*
- Knitting Industries Federation Ltd.*
- Manchester Chamber of Commerce and Industry
- Ministry of Defence*
- Narrow Fabrics Federation
- Textile Institute*
- Warp Knitters Association Ltd.

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- Confederation of British Wool Textiles Limited
- Manchester Chamber of Commerce Testing House and Laboratories
- Soap and Detergent Industry Association
- Society of Dyers and Colourists
- Society of Motor Manufacturers and Traders Limited
- Textile Research Council

This British Standard, having been prepared under the direction of the Fibres, Yarns and Fabrics Standards Committee, was published under the authority of the Executive Board and comes into effect on 30 October 1981

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National foreword

This British Standard has been prepared under the direction of the Fibres, Yarns and Fabrics Standards Committee. It is identical with ISO 6989 “*Textile fibres — Determination of length and length distribution of staple fibres (by measurement of single fibres)*” published in 1981 by the International Organization for Standardization (ISO).

This British Standard supersedes BS 3697 and BS 3994, which are therefore now withdrawn. Attention is also drawn to BS 4044 “*Method for the determination of fibre length by comb sorter diagram*”, which deals with fibre length from comb sorter diagrams, and which is not being developed internationally because of widely differing practices in various countries.

Terminology and conventions. The text of the International Standard has been accepted as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following.

The comma has been used throughout as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “British Standard”.

Cross-references

International Standard	Corresponding British Standard
ISO 139:1973	BS 1051:1981 <i>Glossary of terms relating to the conditioning, testing and mass determination of textiles</i> (Technically equivalent)
ISO 1130:1975	BS 2545:1965 <i>Methods of fibre sampling for testing</i> (Technically equivalent)
ISO 2646:1974	BS 5182:1975 <i>Method for the measurement of the length of wool fibres processed on the worsted system, using a fibre diagram machine</i> (Identical)

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

This International Standard is intended to replace two existing International Standards, ISO 270, *Textile fibres — Determination of fibre length by measuring individual fibres*, and ISO 1822, *Wool — Determination of fibre length using a single-fibre length measuring machine*.

The determination of fibre length by measuring the length of individual fibres is advocated for the following reasons:

- a) the fibre length is better defined than by measurement of the fibre held in combs;
- b) this is a general method, and its range of application is not limited by the length or diameter of the fibres tested;
- c) the risk of accidental or systematic errors is less than with other methods, particularly with collective measurements of the length of a group of fibres.

It should be noted that measurements by this method are made on straightened fibres with the crimp removed, and may give different results from those obtained by other methods of measurement. In the case of fibres which have inherent crimp, straightening the fibres may also include errors due to stretching. Nevertheless, other methods (for example, the comb sorter) are quicker for some fibres (for example, cotton or other short fibres), and for this reason may be preferred, for routine tests, to the more exact method of measuring individual fibre lengths.

ISO 2646, *Wool — Measurement of the length of fibres processed on the worsted system, using a fibre diagram machine*, may be used for the determination of the distribution of the length of fibres by measurement carried out on specimens of silver processed on the worsted system.

1 Scope and field of application

This International Standard specifies

- three methods for determination of the length of staple fibres by measuring individual fibres;
- different methods of expressing the length distribution from values obtained by measurement of individual fibres.

It applies to all discontinuous textile fibres, except those in which strong inherent crimp would render the procedure inapplicable. It does not apply to fibrous bundles of bast fibres.

2 References

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*.

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

3 Principle

Measurement of the individual length of each fibre

- method A: on a straightened fibre on a graduated rule, under a light tension applied with the aid of forceps and grease. This method shall be used for reference in cases of dispute, unless strong inherent crimp renders it inapplicable.
- method B: by measuring by use of an opisometer the length of the image of the fibre enlarged by projection on a screen.
- method C: by use of a semi-mechanical device.

Expression of the length distribution of fibres from the values of fibre length, classing the fibres into groups of length.

4 Apparatus and materials

4.1 Method A (Reference method)

4.1.1 *Polished glass plate*, with a millimetre scale engraved or photographed on it.

4.1.2 *Pointed forceps*

4.1.3 *White petroleum jelly or liquid paraffin*

4.2 Method B

4.2.1 *Projector and screen*, with means for mounting fibres on the projector slide.

4.2.2 *Opisometer and calibration slide*, or other means for determining projector magnification.

4.2.3 *White petroleum jelly or liquid paraffin*

4.3 Method C

4.3.1 *Apparatus* for carrying out semi-automatic measurement of the fibre length under controlled tension, classification of fibre length in groups or classes in intervals of determined length, and registering the number of fibres in each of these groups.

A convenient apparatus for use in this method is described in the Annex.

4.3.2 *Pointed forceps*

4.3.3 *Short graduated rule*, having two marks, 5 mm apart.