BRITISH STANDARD

BS 2865:1984
ISO 7211-5:
1984

Methods for

Determination of linear density of yarn removed from fabric

[ISO title: Textiles — Woven fabrics — Construction — Methods of analysis — Part 5: Determination of linear density of yarn removed from fabric]

UDC 677.017.272:677.074

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Fibres, Yarns, Fabrics and Production Standards Committee (FBM/-) to Technical Committee FBM/11 upon which the following bodies were represented:

British Clothing Industry Association
British Retailers' Association
British Textile Employers' Association
Central Council of the Irish Linen Industry
Confederation of British Wool Textiles Limited
Consumer Standards Advisory Committee of BSI
Department of Trade and Industry (Chemicals, Textiles, Paper and Miscellaneous Division)
Furnishing Fabrics Association
Institute of Trading Standards Administration
International Wool Secretariat
Knitting Industries' Federation Ltd.
Mail Order Traders' Association of Great Britain
Man-made Fibres Producers' Committee
Manchester Testing House
Ministry of Defence
Society of Dyers and Colourists
Textile Distributors' Association
Textile Institute
Textile Research Council
Coopted members

This British Standard, having been prepared under the direction of the Fibres, Yarns, Fabrics and Production Standards Committee, was published under the authority of the Board of BSI and comes into effect on 28 September 1984

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Contents

National foreword

This revision of this British Standard, which has been prepared under the direction of the Fibres, Yarns, Fabrics and Production Standards Committee, supersedes BS 2865:1972, which is withdrawn. It is identical with ISO 7211:1984 "*Textiles — Woven fabrics — Construction — Methods of analysis — Part 5: Determination of linear density of yarn removed from fabric*", published by the International Organization for Standardization (ISO).

Terminology and conventions. The text of the International Standard has been approved 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 drawn especially to the following.

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

Where the words "International Standard" and "this part of ISO 7211" or "ISO 7211-5" appear, referring to this standard, they should be read as "British Standard" and "BS 2865" respectively.

Cross-references

International Standards	Corresponding British Standards
ISO 139:1973	BS 1051:1981 *Glossary of terms relating to the conditioning, testing and mass determination of textiles* (Technically equivalent[a])
ISO 7211-3:1984	BS 2863:1984 *Method for determination of crimp of yarn in fabric* (Identical)

[a] This British Standard glossary contains all the relevant information which, in the International Standard, is written in terms of requirements.

The Technical Committee has reviewed the provisions of ISO/TR 5090 and ISO 6741-4, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

NOTE *Typographical error*. In clause **2**, under the reference to ISO 139, "Standards" should read "standard".

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, 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

The method for determining the linear density of yarn from a fabric differs from that of yarn from a package in that, in the former instance, the crimp imposed upon the yarn by the interlacing of warp and weft must be taken into account. Also, the long lengths of yarn used in tests from a package may not conveniently be taken from a fabric. The results obtained may be subject to appreciable personal error unless a standard method is adopted and adequate samples are taken.

This part of ISO 7211 is divided into four sections. Sections 1 and 4 deal with items applicable to both methods; section 2 specifies the method for determination of the linear density of yarn removed from fabric, without removal of non-fibrous matter; and section 3 specifies the method for determination of linear density of yarn removed from fabric after removal of non-fibrous matter.

It may be noted that the linear density of yarn obtained by these methods may not be same as that of the original yarn used in the fabric.

Section 1. General

1 Scope and field of application

This part of ISO 7211 specifies methods for the determination of linear density of yarn removed from fabric. It relates to yarns of nominally uniform linear density; it describes the method of removing threads from fabric, and specifies the number of threads whose straightened length is to be determined and the methods of determining the mass of all the threads.

2 References

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

ISO/TR 5090, *Textiles — Method for the removal of non-fibrous matter prior to quantitative analysis of fibre mixtures.*

ISO 6741-4, *Textiles — Fibres and yarns — Determination of commercial mass of consignments — Part 4: Values used for commercial allowances and commercial moisture regains*[1)].

ISO 7211-3, *Textiles — Woven fabrics — Construction — Methods of analysis — Part 3: Determination of crimp of yarn in fabric.*

3 Principle

Threads are removed from rectangular strips of fabric, the straightened length of a portion of them is determined and their mass is determined either in equilibrium with the standard atmosphere for testing (method A) or oven-dry plus the commercial allowance given in ISO 6741-4 (method B). Linear density is calculated from the mass and the sum of the straightened lengths.

When heating to 105 °C is likely to cause appreciable loss of volatile matter other than water, method A should be used.

The determination may be carried out without removal of non-fibrous matter (section 2), or after removal of non-fibrous matter (section 3).

4 Apparatus

4.1 *Balance*, accurate to 0,1 % of the smallest quantity to be weighed.

4.2 *Apparatus for determining the straightened length of threads* (see apparatus specified in ISO 7211-3).

4.3 *Ventilated drying oven* (method B).

5 Conditioning and testing atmosphere

The standard atmospheres for pre-conditioning, conditioning and testing textiles specified in ISO 139 shall be used.

[1)] At present the stage of draft Technical Report.

6 Test specimens

Expose to the atmosphere for testing for at least 24 h sufficient fabric, which should preferably include yarn from at least five weft packages, to provide the required number of test specimens.

Cut from the conditioned fabric at least two rectangular strips containing different warp ends for determining the linear density of warp yarns, and at least five rectangular strips representing different weft packages for determining the linear density of weft yarns.

NOTE All the strips should preferably be of the same length and about 50 cm long. Their width should be such as to contain at least 50 lengths of either warp or weft yarn, whichever is under examination.

Obtain the threads from these strips as required as specified in ISO 7211-3. During these operations, keep warp threads separate from weft threads.

Section 2. Determination of linear density of yarn removed from fabric without removal of non-fibrous matter

7 Procedure

7.1 Separation of threads and measurement of length

Remove the first 10 threads from each strip and determine their straightened lengths, all as specified in ISO 7211-3. Then remove at least 40 more threads from each strip.

7.2 Method A — Conditioning to equilibrium with the standard atmosphere

Pre-condition the specimen for 4 h in the standard atmosphere for pre-conditioning specified in ISO 139.

After pre-conditioning, bring the specimens to moisture equilibrium with the standard atmosphere for testing by exposing them to that atmosphere for 24 h or until there is no progressive change in mass greater than 0,1 % in successive exposures of at least 30 min duration.

Weigh all the warp threads together and each group of 50 weft threads separately.

7.3 Method B — Oven-dry plus commercial allowance

Dry the specimens to constant mass in the ventilated drying oven (**4.3**) until successive weighings at intervals of 20 min (specimen weighed inside oven) or 40 min (specimen weighed outside oven) show no progressive change in mass greater than 0,1 %. Weigh all the warp threads together and each group of 50 weft threads separately.

Section 3. Determination of linear density of yarn removed from fabric after removal of non-fibrous matter

8 Procedure

8.1 Separation of threads and measurement of length

Remove the first 10 threads from each strip and determine their straightened lengths, all as specified in ISO 7211-3. Then remove at least 40 more threads from each strip.[2)]

8.2 Removal of non-fibrous matter

Remove any non-fibrous matter, using a procedure given in ISO/TR 5090.

After removal of non-fibrous matter from the specimens, follow the procedure in method A (see **7.2**) or method B (see **7.3**) as given in section 2.

[2)] Where the non-fibrous matter interferes with the separation of threads, it will be necessary to remove it first, but it should be noted that this may affect the length of the threads. If the non-fibrous matter is removed before the threads are separated, expose the extracted fabric to the standard atmosphere for testing for at least 6 h before determining the straightened length.

Section 4. Calculation and expression of results and test report

9 Calculation and expression of results

Calculate the linear density by converting the total length and total mass of warp threads and weft threads into units of the tex system, as shown in the equations below.

9.1 Method A

Calculate the linear density of the yarns from the following equation:

Linear density of the conditioned yarn, in tex units

$$= \frac{\text{mass of threads taken from fabric, in grams} \times 1\,000}{\text{total length of threads, in metres}}$$

where total length = mean straightened length × number of threads weighed.

9.2 Method B

Calculate the linear density of the yarns from the following equation:

Linear density of the oven-dry yarn, in tex units

$$= \frac{\text{mass of the oven-dry threads taken from fabric, in grams} \times 1\,000}{\text{total length of threads, in metres}}$$

where total length = mean straightened length × number of threads weighed.

Linear density of the oven-dry yarn plus commercial allowance

$$= \frac{\text{linear density of oven-dry yarn} \times (100 + K)}{100}$$

where K is the commercial allowance given in ISO 6741-4.

10 Test report

The test report shall include the following particulars:

a) a reference to this International Standard (ISO 7211-5);

b) the standard atmosphere used (temperate or tropical);

c) the actual method used, i.e. method A or method B, either

1) without removal of non-fibrous matter (section 2) or

2) after removal of non-fibrous matter (section 3);

d) the method used for removal of non-fibrous matter, if carried out;

e) the linear density of the warp;

f) the linear density of the weft;

g) details of any deviation from the method.

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Publications referred to

See national foreword.

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