

Methods of fibre sampling for testing

Co-operating organizations

The Textile Divisional Council, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- British Railways Board
- Consumer Council
- Cotton Industry Standards Committee
- Jute Industry Standards Committee
- Linen Industry Standards Committee
- London Transport Board
- Man-made Fibres Industry Standards Committee
- Ministry of Defence, Army Department
- Ministry of Defence, Navy Department
- Silk Industry Standards Committee
- Society of Dyers and Colourists*
- Textile Institute*
- Textile Machinery Industry Standards Committee
- Trades Union Congress
- Wool Industry Standards Committee

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

- British Jute Trade Research Association
- British Launderers' Research Association
- British Man-made Fibres Federation
- Commonwealth Joint Services Committee (Clothing and General Stores)
- Cotton, Silk and Man-made Fibres Research Association
- Hosiery and Allied Trades Research Association
- International Federation of Cotton and Allied Textile Industries
- Linen Industry Research Association
- Wool Industries Research Association

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Foreword

This British Standard is a revision of BS 2545:1954 and is published by arrangement between the Textile Institute and the British Standards Institution. It is based on Tentative Textile Standard No. 77 (see *J. Text. Inst.* 1963, **54**, S19).

The first edition was based on Tentative Textile Standard No. 18 (see *J. Text. Inst.*, 1950, **41**, S1). The present revision was undertaken in order to incorporate more recent changes in current practices, for example, the use of the “random-draw” method in preference to the “dye-sampling” method for wool tops and card slivers, and also recent work of a Sub-committee of the International Organization for Standardization (ISO).

No single technique of sampling can be devised that will serve in all circumstances. Sampling from a bale of cotton, for example, presents problems quite different from those met with in sampling from a consignment of yarn packages; and sampling from a card web is again different from either. If the fibres in the bulk have been well mixed, so that there is no variation in composition from one part to another, i.e. the individual fibres are distributed at random, the sample can without disadvantage be taken from one place anywhere in the bulk. If the fibres in the bulk are not known to have been well mixed, so that the composition may vary from one part to another, a sample taken from any one place may not be representative of the whole bulk.

A selection of methods is therefore presented, illustrating techniques that have been found acceptable in meeting the commoner types of problem encountered in sampling for the assessment of fibre quality. Methods peculiar to the requirements of research are not included; nor are such special techniques as have to be used, for example, in sampling of wool from the fleece, or cotton from the seed.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 9 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.

1 Scope

1.1 This British Standard specifies several methods for preparing laboratory samples of fibres and presents a limited treatment of the problem of drawing specimens for testing. It is not possible for the scope of this specification to be completely comprehensive and, in many instances, the selection of test samples or test specimens must necessarily be covered by the appropriate specification for a given method of test. Notes and tables are included for general guidance in determining the size of the test sample to be taken in order that the determined sample mean shall have given confidence limits.

2 Definitions

2.1 For the purposes of this British Standard the following definitions apply:

2.1.1 individual

any single fibre that is taken, or might be taken, for the purpose of measurement

2.1.2 population

the aggregate of individuals that it is desired to characterize in one or more particulars (e.g. a bale of cotton, all fibres in a set of yarn cops)

2.1.3 zoning

when the population to be sampled is known to vary from part to part with respect to the property to be investigated, the individuals or groups of individuals in the population are taken at random from within the different parts (zones) chosen so that all variations of the property are represented in due proportion. This operation is known as "zoning"

2.1.4 laboratory sample

a sample intended to be representative of a large bulk of material. A convenient size of sample, for many types of test involving only small test specimens, is about 1–2 oz (about 25–50 g): a larger amount will be required for tests involving relatively large test specimens

2.1.5 test specimen

the group of fibres, fibre, or part of fibre that is tested at one time

2.1.6 numerical sample

a sample in which all fibres in the population have an equal chance of being represented

2.1.7 length-biased sample

a sample in which the chance of any fibre of the population being represented is proportional to the length of that fibre. This method of sampling is not directly covered in this specification

3 Sampling methods for bast fibres

NOTE Bast fibres require to be broken in the preliminary stages of processing, and consequently sampling for fibre lengths measurement is carried out on silver or yarn, and not on the raw fibre. Raw bast fibres are therefore sampled only for fibre fineness and fibre strength and the methods adopted depend on the type of bast fibre. Flax and hemp need different handling from jute and kenaf.

3.1 Principle. A representative sample is taken by abstracting small sub-samples from various parts of the bulk and reducing each of these to a convenient number of fibres by repeated halving.

3.2 Definitions

3.2.1 reed

the fibrous strands obtained from a jute stem after retting

3.2.2 head

a bunch of jute reeds, given a twist and folded over before being made into a bale

3.2.3 strick

a small bunch of flax straws, of scutched flax, or of hackled flax, of a size that can be held in the hand, or a bunch of jute similar to a head, but smaller, usually 2 lbs to 4 lbs in weight

3.3 Procedure

3.3.1 Method A. This method applies to bales or other bulks of bast fibres such as flax and hemp in the raw state and to a bulk of dressed line in bunches.

A number of bunches (preferably not less than 20) shall be selected at random from various parts of the bale or bulk, and a strick of fibre removed from each one. Each strick shall then be divided lengthwise by gripping the centre and pulling transversely to the length of the fibres to separate the two portions. One portion shall be discarded and the identity of the root and tip of the retained portion preserved. The retained portion shall again be halved and so on, until the amount of fibre retained is sufficiently small. A composite sample for test purposes shall then be made up by combining the retained fibre from each strick, placing root ends together and tip ends together.