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Textiles — Sampling methods for fibres, yarns and fabrics for testing

Textiles — Méthodes d'échantillonnage des fibres, des fils et des étoffes en vue des essais

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*, Subcommittee SC 23, *Fibres and yarns.*

This second edition cancels and replaces the first edition (ISO 1130:1975), which has been technically revised.

The main changes are as follows:

— the title has been changed from “Textile fibres — Some methods of sampling for testing” to “Textiles — Sampling methods for fibres, yarns and fabrics for testing”;

— This document has been updated in accordance with the editorial rules of the ISO/IEC Directives, Part 2 and subsequent clauses have been renumbered;

— The Introduction has been updated according to the changed title and description of methods from the scope has be moved in to introduction;

— The Scope has been updated to align with the change in title;

— The mandatory normative references clause (Clause 2) has been added and subsequent clauses have been renumbered;

— In Subclause 3.1, some definitions have been updated according to ISO/IEC Directives, Part 2, 2021, 16;

— “Sampling without opening bales” has been revised from Note to Subclause 4.2.4.2.3;

— Subclauses 4.2.4.2.2, related to the sampling from a bulk consisting of several bales of cotton, when the number of bales is not more than 10, have been added.

— Subclauses 4.3.4 and 4.3.5 related to the sampling method for man-made staple fibres, have been added;

— Subclauses 5.1.2 related to the sampling fibres from slivers or rovings, have been added;

— Sampling fibres from processed materials, yarns and fabrics has been revised as an individual clause;

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— Clauses about Sampling of yarns, sampling of fabrics and test report have been added;

— Figure 1 has been added;

— The Bibliography has been added.

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Introduction

No single technique of sampling of fibres, yarns and fabrics can be devised that will serve in all circumstances. Sampling from a bale of cotton, for example, presents problems quite different from those encountered in sampling from a consignment of yarn packages, while 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 can vary from one part to another, a sample taken from any one place would not be representative of the whole bulk.

The samples are generally taken as the shipping units making up a lot; such as bales of fibre, cases of yarn, rolls of fabric, or cartons of garments or other finished products. Adequate sampling for acceptance testing requires taking into account not only the variability between the laboratory samples but also the variability between the laboratory test samples and between the test specimens.

The objective of sampling can vary with the purpose for which the test method is used. The objective of sampling for acceptance testing is to obtain material which will estimate, without bias, a property of the lot being evaluated- and which allows making a decision on whether to accept or reject a lot with reasonable procedures and consumers risks when the acceptable quality level and the limiting quality level are at realistic levels. There are normally many ways to estimate the property of interest to specified degree of precision. The most economical way to do so will depend on the relative size of the sources of variability associated with sampling the laboratory samples.

A selection of methods is therefore presented, illustrating techniques that have been found acceptable in meeting the most common 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 have to be used, for example, in sampling of wool from the fleece, or cotton from the seed.

Although in this document, the principle of several methods for preparing laboratory samples of fibres, yarns and fabrics is described, it is not possible for the coverage of each individual procedure for each method to be fully comprehensive; in many instances, the selection of laboratory test samples or test specimens is necessarily covered by the appropriate method of test.

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Textiles — Sampling methods for fibres, yarns and fabrics for testing

1 Scope

This document specifies several methods for preparing laboratory samples of fibres, yarns and fabrics and presents a limited treatment of the problem of drawing specimens for testing.

The selection of length-biased samples is not within the scope of this document. It does not cover particular procedures for the determination of commercial weights or moisture content.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 General terms and definitions

3.1.1
individual
any single fibre, yarn or fabric that can be taken for the purpose of measurement

3.1.2
population
aggregate of *individuals* (3.1.1) that is desired to characterize in one or more particulars

EXAMPLE Fibres contained in a bale of cotton; all the constituent fibres in a set of yarn cops.

3.1.3
zoning,verb
operation where individuals or groups of *individuals* (3.1.1) in the *population* (3.1.2) are taken at random from within the different parts or zones

Note 1 to entry: This is performed when the population to be sampled is known to vary from part to part with respect to the property to be investigated. The samples are chosen so that all variations of the property are represented in due proportion.

3.1.4
laboratory sample
sample intended to be representative of a large bulk of material, in the state in which it is sent to the laboratory

Note 1 to entry: A convenient size of laboratory sample for many types of test involving only small test specimens is about 25 g to 50 g; a larger amount will be required for tests involving relatively large test specimens.

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3.1.5
laboratory test sample
portion of fibres, yarns or fabrics taken from the *laboratory sample* (3.1.4), in such a way as to ensure its representative character and, to provide a quantity small enough to be easily convertible into *test specimens* (3.1.6)

3.1.6
test specimen
part of the *laboratory test sample* (3.1.5), (fibres, yarns, or fabrics) which is tested at one time

3.1.7
numerical sample
sample in which all fibres in the *population* (3.1.2) have an equal chance of being represented

3.1.8
length-biased sample
sample in which the chance of any fibre of the *population* (3.1.2) being represented is proportional to the length of that fibre

3.2 Terms and definitions for bast fibres

3.2.1
reed
fibrous strands obtained from a jute stem after retting

3.2.2
head
bunch of jute reeds, given a twist and folded over before being made into a bale

3.2.3
bunch
aggregate of pieces of flax tied up with two or more ties preparatory to baling

3.2.4
strick
small bunch of flax straws, or 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 1 kg to 2 kg in mass

4 Sampling fibres

4.1 Sampling methods for bast fibres

NOTE Bast fibres which are required to be broken in the preliminary stages of processing, and consequently sampling for fibre length measurement, are carried out on sliver or yarn, and not on the raw fibre.

4.1.1 General

Raw bast fibres are usually sampled only for determination of 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.

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

Method B applies to bales or bulks of jute or kenaf in the raw state.

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