INTERNATIONAL STANDARD

ISO 1833-11

Second edition
2017-08

Textiles — Quantitative chemical analysis —

Part 11: Mixtures of certain cellulose fibres with certain other fibres (method using sulfuric acid)

Textiles — Analyse chimique quantitative —

Partie 11: Mélanges de certaines fibres de cellulose avec certaines autres fibres (méthode à l'acide sulfurique)

Reference number
ISO 1833-11:2017(E)

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Foreword

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 38, *Textiles*.

This second edition cancels and replaces the first edition (ISO 1833-11:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the title was changed from "Mixtures of certain cellulose fibres **and** certain other fibres…" to "Mixtures of certain cellulose fibres **with** certain other fibres"; the subject was extended from "polyester" to "certain other fibres";

— in Clause 1, some remaining fibres were added;

— in Clause 8, a specific *d* factor for the propylene/polyamide bicomponent was added;

— in Clause 9, "percentage point" was added to avoid confusion.

A list of all parts in the ISO 1833 series can be found on the ISO website.

Textiles — Quantitative chemical analysis —

Part 11: Mixtures of certain cellulose fibres with certain other fibres (method using sulfuric acid)

1 Scope

This document specifies a method, using sulfuric acid, to determine the mass percentage of cellulose fibres, after removal of non-fibrous matter, in textiles made of mixtures of

— natural and man-made cellulose fibres, such as cotton, flax, hemp, ramie, viscose, cupro, modal, lyocell

with

— polyester, polypropylene, elastomultiester, elastolefin and polypropylene/polyamide bicomponent.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1833-1, *Textiles — Quantitative chemical analysis — Part 1: General principles of testing*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

4 Principle

The cellulose fibre is dissolved out from a known dry mass of the mixture, with 75 % (mass fraction) sulfuric acid. The residue is collected, washed, dried and weighed; its mass is expressed as a percentage of the dry mass of the mixture. The proportion of cellulose fibre is found by the difference.

5 Reagents

Use the reagents described in ISO 1833-1 together with those given in 5.1 and 5.2.

5.1 Sulfuric acid, 75 % (mass fraction).

A suitable reagent can be prepared by adding carefully, while cooling, 700 ml of concentrated sulfuric acid (ρ = 1,84 g/ml at 20 °C) to 350 ml of distilled water. After the solution has cooled to room temperature, dilute it to 1 l with water. The concentration is not critical within the range 73 % to 77 % (mass fraction) sulfuric acid.

5.2 Ammonia, dilute solution.

Dilute 80 ml of concentrated ammonia solution (ρ = 0,88 g/ml at 20 °C) to 1 l with water.

6 Apparatus

Use the apparatus described in ISO 1833-1 together with those given in 6.1 and 6.2.

6.1 Conical flask, minimum capacity 500 ml, glass-stoppered.

6.2 Heating apparatus suitable for maintaining the temperature of the flask at (50 ± 5) °C.

7 Test procedure

Follow the general procedure given in ISO 1833-1, and then proceed as follows.

To the specimen contained in the conical flask (6.1), add 200 ml of sulfuric acid (5.1) per gram of specimen. Insert the stopper and shake the flask carefully to wet out the specimen. Maintain the flask at (50 ± 5) °C for 1 h, shaking the flask gently at intervals of about 10 min.

Filter the contents of the flask through the weighed filter crucible using suction. Transfer any residual fibres to the crucible by washing out the flask with a little more sulfuric acid (5.1).

Drain the crucible using suction, and wash the residue on the filter once by filling the crucible with a fresh portion of sulfuric acid.

Do not apply suction until the crucible has drained under gravity or stood for 1 min.

Wash the residue successively several times with cold water, twice with dilute ammonia solution, and then thoroughly with cold water, draining the crucible using suction after each addition. Do not apply suction until each washing liquor has drained under gravity.

Finally, drain the crucible using suction, dry the crucible and residue, then cool and weigh them.

8 Calculation and expression of results

Calculate the results as described in the general instructions of ISO 1833-1.

The value of d is 1,00 except for the propylene/polyamide bicomponent for which d is 1,01.

9 Precision

On a homogeneous mixture of textile materials, the confidence limits of the results obtained by this method are not greater than ±1 percentage point for the confidence level of 95 %.