
**Textiles — Quantitative chemical
analysis —**

Part 17:

**Mixtures of cellulose fibres and
certain fibres with chlorofibres and
certain other fibres (method using
concentrated sulfuric acid)**

Textiles — Analyse chimique quantitative —

*Partie 17: Mélanges de fibres cellulosiques et certaines fibres avec des
chlorofibres et certaines autres fibres (méthode à l'acide sulfurique
concentré)*

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 1833-17:2006), which has been technically revised. The main changes compared to the previous edition are as follows:

- the title has been changed from “Mixtures of chlorofibres (homopolymers of vinyl chloride) and certain other fibres (method using sulfuric acid)” to “Mixtures of cellulose fibres and certain fibres with chlorofibres and certain other fibres (method using concentrated sulfuric acid)”;
- [Clause 1](#) has been rearranged and several remaining fibres have been added;
- [Clause 4](#) has been rearranged according to the scope;
- in [5.2](#), “dilute solution” has been added;
- in [Clause 8](#), a specific *d* factor for melamine and propylene/polyamide bicomponent has been added;
- in [Clause 9](#), “percentage point” has been added to avoid confusion.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Textiles — Quantitative chemical analysis —

Part 17:

Mixtures of cellulose fibres and certain fibres with chlorofibres and certain other fibres (method using concentrated sulfuric acid)

1 Scope

This document specifies a method, using concentrated sulfuric acid, to determine the mass percentage of chlorofibres and certain other fibres, after removal of non-fibrous material, in textiles made of mixtures of

- cotton, viscose, cupro, modal, lyocell, acetate, triacetate, polyamide, polyester, elastomultiester, certain acrylic and certain modacrylic fibres

with

- chlorofibres (based on homopolymers of vinyl chloride), polypropylene, elastolefin, melamine and polypropylene/polyamide bicomponent.

The modacrylics concerned are those which give a clear solution when immersed in concentrated sulfuric acid.

This method can be used, particularly in place of the methods described in ISO 1833-12 and ISO 1833-13, in all cases where a preliminary test shows that the chlorofibres do not dissolve completely either in dimethylformamide or in the azeotropic mixture of carbon disulfide and acetone.

2 Normative references

The following referenced documents are indispensable for the application 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 cotton, viscose, cupro, modal, lyocell, acetate, triacetate, polyamide, polyester, elastomultiester, certain acrylic or certain modacrylic fibres are dissolved out from a known dry mass of the mixture, with concentrated 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 dissolved fibre is found by the difference.

5 Reagents

Use the reagents described in ISO 1833-1 together with those given in [5.1](#), [5.2](#) and [5.3](#).

5.1 Sulfuric acid, concentrated ($\rho = 1,84$ g/ml at 20 °C).

5.2 Sulfuric acid, dilute solution.

Prepare this dilute solution by adding carefully, while cooling, 400 ml of sulfuric acid ([5.1](#)) to 500 ml of distilled water. After cooling this solution to room temperature, dilute the solution to 1 l with water.

5.3 Ammonia, dilute solution.

Dilute 60 ml of concentrated ammonia solution ($\rho = 0,880$ 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, of minimum capacity 200 ml, glass stoppered.

6.2 Glass rod, with flattened end.

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, add 100 ml of the sulfuric acid ([5.1](#)) per gram of specimen. Allow the contents of the conical flask to remain at room temperature for 10 min, and during that time, stir the test specimen occasionally by means of the glass rod.

If a woven or knitted fabric is being treated, wedge it between the wall of conical flask and the glass rod and exert a light pressure in order to separate the material dissolved by the sulfuric acid.

Decant the liquid through the weighed filter crucible. Add a fresh portion of 100 ml of the sulfuric acid ([5.1](#)) to the conical flask and repeat the same operation.

Transfer the contents of the conical flask to the filter crucible, and transfer the fibrous residue there with the aid of the glass rod. If necessary, add a little concentrated sulfuric acid ([5.1](#)) to the conical flask in order to remove any fibres adhering to the wall.

Drain the filter crucible with suction; remove the filtrate by emptying or changing the filter-flask, wash the residue in the crucible successively with the 50 % sulfuric acid solution ([5.2](#)), the distilled or deionized water, the ammonia solution ([5.3](#)), and finally with the distilled or deionized water, draining the crucible using suction after each addition until the water drained from the crucible is neutral. Do not apply suction during the washing operation, but only after the liquid has drained through the crucible.

Finally, 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 melamine and polypropylene/polyamide bicomponent, for which the value of d is 1,01.

9 Precision

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

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Bibliography

- [1] ISO 1833-12, *Textiles — Quantitative chemical analysis — Part 12: Mixtures of acrylic, certain modacrylics, certain chlorofibres, certain elastane fibres with certain other fibres (method using dimethylformamide)*
- [2] ISO 1833-13, *Textiles — Quantitative chemical analysis — Part 13: Mixtures of certain chlorofibres and certain other fibres (method using carbon disulfide/acetone)*

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