INTERNATIONAL STANDARD

ISO 1833-6

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Textiles — Quantitative chemical analysis —

Part 6: Mixtures of viscose or certain types of cupro or modal or lyocell and cotton fibres (method using formic acid and zinc chloride)

Textiles — Analyse chimique quantitative —

Partie 6: Mélanges de viscose ou de certains types de cupro, modal ou lyocell et de fibres de coton (méthode à l'acide formique et au chlorure de zinc)

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 1833-6 was prepared by Technical Committee ISO/TC 38, *Textiles*.

This method supersedes Clause 5 of ISO 1833:1977.

ISO 1833 consists of the following parts, under the general title *Textiles — Quantitative chemical analysis*:

— *Part 1: General principles of testing*

— *Part 2: Ternary fibre mixtures*

— *Part 3: Mixtures of acetate and certain other fibres (method using acetone)*

— *Part 4: Mixtures of certain protein and certain other fibres (method using hypochlorite)*

— *Part 5: Mixtures of viscose, cupro or modal and cotton fibres (method using sodium zincate)*

— *Part 6: Mixtures of viscose or certain types of cupro or modal or lyocell and cotton fibres (method using formic acid and zinc chloride)*

— *Part 7: Mixtures of polyamide and certain other fibres (method using formic acid)*

— *Part 8: Mixtures of acetate and triacetate fibres (method using acetone)*

— *Part 9: Mixtures of acetate and triacetate fibres (method using benzyl alcohol)*

— *Part 10: Mixtures of triacetate or polylactide and certain other fibres (method using dichloromethane)*

— *Part 11: Mixtures of cellulose and polyester fibres (method using sulfuric acid)*

— *Part 12: Mixtures of acrylic, certain modacrylics, certain chlorofibres, certain elastanes and certain other fibres (method using dimethylformamide)*

— *Part 13: Mixtures of certain chlorofibres and certain other fibres (method using carbon disulfide/acetone)*

— *Part 14: Mixtures of acetate and certain chlorofibres (method using acetic acid)*

— *Part 15: Mixtures of jute and certain animal fibres (method by determining nitrogen content)*

— *Part 16: Mixtures of polypropylene fibres and certain other fibres (method using xylene)*

— *Part 17: Mixtures of chlorofibres (homopolymers of vinyl chloride) and certain other fibres (method using sulfuric acid)*

— *Part 18: Mixtures of silk and wool or hair (method using sulfuric acid)*

— *Part 19: Mixtures of cellulose fibres and asbestos (method by heating)*

— *Part 21: Mixtures of chlorofibres, certain modacrylics, certain elastanes, acetates, triacetates and certain other fibres (method using cyclohexanone)*

The following parts are under preparation:

— *Part 20: Mixtures of elastane and some other fibres (method using dimethylacetamide)*

— *Part 22: Mixtures of viscose or certain types of cupro or modal or lyocell and flax fibres (method using formic acid and zinc chloride)*

— *Part 23: Mixtures of polyethylene and polypropylene (method using cyclohexanone)*

— *Part 24: Mixtures of polyester and some other fibres (method using phenol and tetrachloroethane)*

Textiles — Quantitative chemical analysis —

Part 6: Mixtures of viscose or certain types of cupro or modal or lyocell and cotton fibres (method using formic acid and zinc chloride)

1 Scope

This part of ISO 1833 specifies a method, using a mixture of formic acid and zinc chloride, to determine the percentage of cotton, after removal of non-fibrous matter, in textiles made of binary mixtures of

— viscose or some cupro, modal and lyocell fibres,

with

— cotton.

If a cupro or modal or lyocell fibre is found to be present, a preliminary test is carried out to see whether it is soluble in the reagent.

The method is not applicable to mixtures in which the cotton has suffered extensive chemical degradation, nor when the viscose, cupro, modal or lyocell fibre is rendered incompletely soluble by the presence of certain permanent finishes or reactive dyes that cannot be removed completely.

WARNING — This part of ISO 1833 calls for the use of substances/procedures that may be injurious to the health/environment if appropriate conditions are not observed. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety/environment at any stage.

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 Principle

The viscose, cupro, modal or lyocell fibre is dissolved out from a known dry mass of the mixture, with a reagent composed of formic acid and zinc chloride. The residue is collected, washed, dried and weighed; its corrected mass is expressed as a percentage of the dry mass of the mixture. The percentage of viscose, cupro, modal or lyocell fibre is found by difference.

4 Reagents

Use the reagents described in ISO 1833-1, together with those specified in 4.1 and 4.2.

4.1 Formic acid/zinc chloride reagent.

Prepare a solution containing 20 g of anhydrous zinc chloride (minimum assay to be $>$ 98 %) and 68 g of anhydrous formic acid, made up to 100 g with water.

The harmful effects of this reagent should be borne in mind, and full precautions should be taken in its use.

4.2 Ammonia, dilute solution.

Dilute 20 ml of concentrated ammonia solution (ρ 0,880 g/ml) to 1 l with water.

5 Apparatus

Use the apparatus described in ISO 1833-1, together with those described in 5.1 and 5.2.

5.1 Conical flask, minimum capacity 200 ml, glass-stoppered.

5.2 Heating apparatus, suitable for maintaining the temperature of the flask at (40 $\pm$ 2) °C or (70 $\pm$ 2) °C.

6 Test procedure

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

Place the specimen without delay in the conical flask preheated to 40 °C. Add 100 ml of formic acid/zinc chloride reagent per gram of specimen, preheated to 40 °C. Stopper the flask and shake it.

Allow the flask and contents to remain at 40 °C for 2 h 30 min, shaking it twice during this time at intervals of about 45 min.

In case of difficulties dissolving some man-made fibres at 40 °C, apply the same procedure but at 70 °C for 20 min.

Filter the contents of the flask through the weighed filter crucible and wash any fibres from the flask into the crucible with the reagent. Rinse with a further 20 ml of reagent, preheated to 40 °C.

Wash the crucible and residue thoroughly with water at 40 °C (or at 70 °C when applicable).

Rinse the residue with 100 ml of cold ammonia solution, ensuring that the residue remains totally immersed in the solution for 10 min, then rinse with cold water. Do not apply suction until each washing liquor has drained under gravity.

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

7 Calculation and expression of results

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

The value of d is 1,02 for all types of cotton, except when the temperature of 70 °C is applied; then d is 1,03.

8 Precision

On a homogeneous mixture of textile materials, the confidence limits of the results obtained by this method are not greater than ± 2 for the confidence level of 95 %.

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