INTERNATIONAL STANDARD

ISO 1833-18

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Textiles — Quantitative chemical analysis —

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

Textiles — Analyse chimique quantitative —

Partie 18: Mélanges de soie et de laine ou poils (méthode à l'acide sulfurique)

Reference number
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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 1833-18 was prepared by Technical Committee ISO/TC 38, *Textiles*.

This first edition of ISO 1833-18 cancels and replaces Clause 17 of ISO 1833:1977.

ISO 1833:1977 will be cancelled and replaced by ISO 1833-1, ISO 1833-3, ISO 1833-4, ISO 1833-5, ISO 1833-6, ISO 1833-7, ISO 1833-8, ISO 1833-9, ISO 1833-10, ISO 1833-11, ISO 1833-12, ISO 1833-13, ISO 1833-14, ISO 1833-15, ISO 1833-16, ISO 1833-17, ISO 1833-18 and ISO 1833-19.

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

— *Part 20: Mixtures of elastane and certain 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 chlorate)*

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

1 Scope

This part of ISO 1833 specifies a method, using sulfuric acid, to determine the percentage of silk, after removal of non-fibrous matter, in textiles made of binary mixtures of

— silk

and

— wool or animal hair.

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 silk fibre is dissolved from a known dry mass of the mixture with 75 % (mass fraction) sulfuric acid [1]. The residue is collected, washed, dried and weighed; its mass, corrected if necessary, is expressed as a percentage of the dry mass of the mixture. The percentage of silk is found by the difference.

4 Reagents

Use the reagents described in ISO 1833-1 together with those given in 4.1, 4.2 and 4.3.

4.1 Sulfuric acid.

Prepare this reagent by adding carefully, while cooling, 700 ml of sulfuric acid ($\rho = 1{,}84$ g/ml) to 350 ml of distilled water. After cooling this solution 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.

4.2 Sulfuric acid, dilute solution.

Slowly add 100 ml of sulfuric acid (4.1) ($\rho = 1{,}84$ g/ml) to 1 900 ml of distilled water.

1) Wild silk, such as tussah silk, are not completely soluble in 75 % (mass fraction) sulfuric acid.

4.3 Ammonia, dilute solution.

Dilute 200 ml of concentrated ammonia solution ($\rho = 0{,}880$ g/ml) to 1 l with water.

5 Apparatus

Use the apparatus described in ISO 1833-1 together with that given in 5.1.

5.1 Conical flasks, of minimum capacity 200 ml, glass stoppered.

6 Test procedure

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

To the specimen contained in a glass-stoppered conical flask, add 100 ml of the sulfuric acid (4.1) per gram of specimen, insert the stopper, shake vigorously (preferably in a mechanical shaker) and allow to stand for 30 min at room temperature.

Shake again and allow to stand for 30 min.

Shake a last time and filter the contents of the flask through the weighed filter crucible. Wash any remaining fibres from the flask with a little sulfuric acid (4.1).

Drain the crucible using suction and wash the residue on the crucible successively with 50 ml of the dilute sulfuric acid solution (4.2), 50 ml of water and 50 ml of the dilute ammonia solution (4.3). Each time, allow the fibres to remain in contact with the liquid for at least 10 min before applying suction.

Rinse with water, leaving the fibres in contact with the water for about 30 min.

Finally, drain the crucible using suction, dry the crucible and residue, then 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 0,985.

8 Precision

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

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