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Textiles - Quantitative chemical analysis - Part 11: Mixtures of certain cellulose fibres with certain other fibres (method using sulfuric acid)

纺织品 定量化学分析 第 11 部分:某些纤维素纤维与某些其他纤维的混合物(硫酸法)

(ISO 1833-11:2017, MOD)

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Table of Contents

Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020, *Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents*.

This document is Part 11 of GB/T 2910 *Textiles - Quantitative chemical analysis*. The following parts have been issued for GB/T 2910:

-- Part 1: General principles of testing;

-- Part 2: Ternary fibre mixture;

-- Part 3: Mixtures of acetate and certain other fibres (method using acetone);

-- Part 4: Mixtures of certain protein fibres with 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 certain cellulose fibres with certain other fibres (method using sulfuric acid);

-- Part 12: Mixtures of acrylic, certain modacrylics, certain chlorofibres, certain elastane fibres with certain other fibres (method using dimethylformamide);

-- Part 13: Mixtures of certain chlorofibers and certain other fibers (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);

Textiles - Quantitative chemical analysis - Part 11: Mixtures of certain cellulose fibres with certain other fibres (method using sulfuric acid)

1 Scope

This document describes a method for the determination of cellulose fibre content in binary mixtures of certain cellulose fibres and certain other fibres consisting of the following fibres, after removal of non-fibrous matter, using the sulfuric acid method:

-- natural cellulose fibres and regenerated cellulose fibres, such as cotton fibre, linen fibre, hemp fibre, ramie fibre, viscose fibre, cupro fibre, modal fibre, lyocell fibre, and

-- polyester fibre, polypropylene fibre, polyethylene fibre, polyester composite elastic fibre, polyolefin elastic fibre, polypropylene/polyamide composite fibre.

Note 1: Appendix A and Appendix B give the qualitative identification methods of polyester composite elastic fibres and polyolefin elastic fibres, respectively.

Note 2: Polypropylene/polyamide composite fibre is a sheath-core composite fibre with the sheath layer being polypropylene fibre and the core layer being polyamide fibre.

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 version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 2910.1, Textiles - Quantitative chemical analysis - Part 1: General principles of testing (GB/T 2910.1-2009, ISO 1833-1:2006, IDT)

3 Terms and definitions

No terms and definitions need to be defined in this document.

4 Principle

Use 75% (mass fraction) sulfuric acid to dissolve and remove cellulose fibres from a mixture of known dry mass; collect the residue; wash, dry and weigh it; use the corrected mass to calculate its percentage of the dry mass of the mixture. Obtain the percentage of cellulose fibres from the difference.

5 Reagents

Use the reagents specified in GB/T 2910.1 as well as 5.1 and 5.2.

5.1 Sulfuric acid (mass fraction 75%): Carefully add 700 mL of concentrated sulfuric acid (ρ = 1.84 g/mL at 20 °C) into 350 mL of distilled water. After the solution cools to room temperature, add distilled water to 1 L. The concentration range of the sulfuric acid solution is allowed to be 73% ~ 77% (mass fraction).

5.2 Dilute ammonia solution: Add water to dilute 80 mL of concentrated ammonia solution (ρ = 0.880 g/mL at 20°C) to 1 L.

6 Apparatus

Use the apparatus specified in GB/T 2910.1 as well as 6.1 and 6.2.

6.1 Stoppered conical flask, with a capacity not less than 500 mL, glass-stoppered.

6.2 Heating device, capable of maintaining the temperature at 50 ℃ ± 5 ℃.

7 Test procedures

Follow the general procedures specified in GB/T 2910.1, and then follow the steps below.

Place the prepared sample in a conical flask (6.1); add 200 mL of sulfuric acid solution (5.1) per gram of sample; plug the flask with a glass stopper; shake the flask to fully moisten the sample; then keep the flask at 50 ℃ ± 5 ℃ for 1 h; shake it every 10 min.

Filter the residue into a glass crucible; drain the liquid by vacuum suction; then add a small amount of sulfuric acid (5.1) to clean the flask. Drain the liquid by vacuum suction; add new sulfuric acid solution (5.1) to the crucible to clean the residue; drain the liquid by gravity for at least 1 minute; then use vacuum suction.

Use cold water to wash several times continuously; use dilute ammonia solution (5.2) to neutralize twice; then use cold water to wash. Drain the liquid first by gravity and then by suction for each washing. Finally, dry the crucible and the residue; cool; weigh.

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