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Textiles - Quantitative chemical analysis - Mixtures of polyoxadiazole fiber and certain other fibers

纺织品 定量化学分析 聚芳二唑纤维与某些其他纤维的混合物

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Textiles - Quantitative chemical analysis - Mixtures of polyoxadiazole fiber and certain other fibers

1 Scope

This document specifies the method that uses chemical analysis method to determine the fiber content of polyarylenediazole fiber bicomponent mixture after removal of non-fibrous material.

This document is applicable to polyoxadiazole fiber and certain protein fibers (wool, mulberry silk, etc.), regenerated cellulose fibers (lyocell fiber, modal fiber, viscose fiber, etc.), polyester fiber, polyamide fiber, polyvinyl alcohol fiber, polyacrylonitrile fibers, certain modacrylic fibers, polyurethane elastic fibers, acetate fibers, triacetate fibers, polylactic acid fibers, natural cellulose fibers (cotton, flax, ramie), polyimide fibers, polyamide fibers Bicomponent blend of vinyl fibers, carbon fibers, para-aramid fibers and meta-aramid fibers.

NOTE: Annex A gives the identification test methods for polyimide fibers, meta-aramid fibers, para-aramid fibers and polyoxadiazole fibers.

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.

GB/T 2910.1, *Textiles - Quantitative chemical analysis - Part 1: General principles of testing*

GB/T 2910.4, *Textiles - Quantitative chemical analysis - Part 4: Mixtures of protein and certain other fibers (method using hypochlorite)*

GB/T 2910.6, *Textiles - Quantitative chemical analysis - Part 6: Mixtures of viscose or certain types of cupro or modal or lyocell and cotton fibers (method using formic acid and zinc chloride)*

GB/T 2910.10, *Textiles - Quantitative chemical analysis - Part 10: Mixtures of triacetate or polylactide and certain other fibers (method using dichloromethane)*

GB/T 2910.11, *Textiles - Quantitative chemical analysis - Part 11: Mixtures of cellulose and polyester fibers (method using sulfuric acid)*

GB/T 2910.12, *Textiles - Quantitative chemical analysis - Part 12: Mixtures of acrylic, certain modacrylic, certain chlorofibre, certain elastane and certain other fibers (method using dimethylformamide)*

GB/T 2910.14, *Textiles - Quantitative chemical analysis - Part 14: Mixtures of acetate and certain chlorofibre (method using acetic acid)*

GB/T 2910.24, *Textiles - Quantitative chemical analysis - Part 24: Mixtures of polyester and some other fibers (method using phenol and tetrachloroethane)*

GB/T 38015-2019, *Textiles - Quantitative chemical analysis - Mixtures of elastane and certain other fibers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 polyoxadiazole fiber

A high temperature resistant fiber in which benzene rings and five-membered aromatic diazole rings are alternately arranged in the main chain of the molecule.

NOTE: The full name of polyoxadiazole fiber is aromatic poly-1,3,4-arylene diazole.

4 Mixtures of polyoxadiazole fibers with certain protein fibers (hypochlorite method)

Carry out according to GB/T 2910.4.

The d value of the polyoxadiazole fiber is 1.00.

5 Mixture of polyoxadiazole fiber and regenerated cellulose fiber (formic acid/zinc chloride method)

Carry out according to GB/T 2910.6. Test is conducted at 70°C.

The d value of the polyoxadiazole fiber is 1.01.

6 Mixture of polyoxadiazole fiber and polyester fiber (phenol/tetrachloroethane method)

Carry out according to GB/T 2910.24.

Use sodium hypochlorite solution to dissolve and remove cellulose fibers from a mixture of known dry mass. Collect the residues. Wash, dry and weigh. Use the corrected mass to calculate the percentage of the dry mass of the mixture. Obtain the mass fraction of cellulose fibers from the difference.

11.2 Reagents

11.2.1 Sodium hypochlorite solution: Add sodium hydroxide to 1mol/L sodium hypochlorite solution. Make its content 5g/L. This solution can be titrated with iodometry. Make its concentration 0.9mol/L~1.1mol/L.

11.2.2 Dilute acetic acid solution: Add water to dilute 5mL of glacial acetic acid to 1L.

11.3 Instruments and equipment

Use the instruments and equipment specified in GB/T 2910.1 and the following equipment.

- A stoppered Erlenmeyer flask: The capacity is 250mL.

- Heating device: The temperature can be kept at 90℃~95℃.

11.4 Test steps

Follow the general procedures specified in GB/T 2910.1. Then follow the steps below.

Quickly put the specimen into the stoppered Erlenmeyer flask that contains sodium hypochlorite solution preheated to 90°C. Add 100mL of sodium hypochlorite solution (11.2.1) per gram of specimen. Close the bottle tightly. Shake the flask to fully wet the specimen. Put the flask in a water bath with a temperature of 90℃~95℃ for 30min. Shake every 10min.

Use the test solution to wash the residue in the flask into a glass sandy crucible of known mass. Use 20mL of 90°C solution to wash. Then use 90°C water to rinse. And then use water, dilute acetic acid solution (11.2.2) to wash and neutralize the residue in the crucible twice in turn. In every washing, use gravity drainage first and then suction drainage. After washing the residue in the crucible with water, dry, cool and weigh the glass sand core crucible and the residue.

11.5 Calculation and presentation of results

The calculation and representation of the results shall be in accordance with the provisions of GB/T 2910.1. The d value of the polyoxadiazole fiber is 1.01.

12 Mixtures of polyoxadiazole fibers with polyimide fibers, polyethylene fibers, carbon fibers or para-aramid fibers (75%

(N, N-dimethylacetamide method of 4% lithium chloride)

13.1 Principle

Use N, N-dimethylacetamide solution of 4% lithium chloride to dissolve and remove meta-aramid fibers from the mixture of known dry mass. Collect the residues. Wash, dry and weigh. Use the corrected mass to calculate the percentage of the dry mass of the mixture. Obtain the mass fraction of meta-aramid fibers from the difference.

13.2 Reagents

13.2.1 N, N-dimethylacetamide solution of 4% lithium chloride: Add N, N-dimethylacetamide into 4g of anhydrous lithium chloride until 100g.

13.2.2 70% isopropyl alcohol: Accurately weigh 70.07g of 99.9% isopropanol. Add 29.93g of water to prepare.

13.3 Instruments and equipment

Use the instruments and equipment specified in GB/T 2910.1 and the followings.

- A stoppered Erlenmeyer flask: The capacity is 250mL.

- Heating device: The temperature can be kept at 65℃±1℃.

13.4 Test steps

Follow the general procedures specified in GB/T 2910.1. Then follow the steps below.

Put the specimen into the Erlenmeyer flask. Add 100mL of N, N-dimethylacetamide solution of 4% lithium chloride solution per gram of specimen. Cap the flask. Shake the flask to fully wet the specimen. Put the flask into a water bath with a temperature of 65℃±1℃ and shake for 180min. Remove the solution. Then add N, N-dimethylacetamide solution of lithium chloride. Shake 5min~10min. Repeat decanting and shaking one more time.

Use a glass sand core crucible of known dry mass to filter the solution. Conduct vacuum suction filtration. Use 70% isopropanol to thoroughly rinse the residue in the crucible. Perform gravity drain first and then suction drain for each washing. After washing the residue in the crucible with water, dry, cool and weigh the glass sand core crucible and the residue.

13.5 Calculation and presentation of results

The calculation and representation of the results shall be in accordance with the provisions of GB/T 2910.1. The d value of the polyoxadiazole fiber is 1.00.

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