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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 37629-2019

Textiles - Quantitative chemical analysis - Mixtures of acrylic with certain other fibres (method using formic acid and zinc chloride)

纺织品 定量化学分析 聚丙烯腈纤维与某些其他纤维的混合物（甲酸/氯化锌法）

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Standardization Administration of the PRC

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Foreword

GB/T 37629-2019 was issued on 4 June 2019 by the State Administration for Market Regulation and the Standardization Administration of the People's Republic of China, and has been in force since 1 January 2020. The /T in the designation marks it as a recommended national standard.

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by the China National Textile and Apparel Council and is under the jurisdiction of the National Technical Committee on Textiles of Standardization Administration of China (SAC/TC 209).

The drafting units are the China Textile Testing and Certification Co. Ltd., the Henan Provincial Down and Feather Product Quality Supervision and Inspection Centre, Anhui Hongai Industrial Co. Ltd., Fujian Changgeng New Material Co. Ltd., Changle Yongyi Knitting and Textile Co. Ltd. and the Harbin Municipal Product Quality Supervision and Inspection Institute.

Warning

Warning - persons using this standard shall have practical experience of work in a regular laboratory. This standard does not point out all the safety problems that may arise; it is the responsibility of the user to take appropriate safety and health measures and to ensure that

the conditions laid down by the relevant national laws and regulations are met.

1 Scope

China's national method for finding out how much acrylic there is in a two-fibre blend, by dissolving the acrylic away in a solution of formic acid and zinc chloride and weighing what is left. The whole family of quantitative chemical analysis standards works on the same idea - take a fibre out with a solvent that leaves its partner untouched, weigh the residue, and get the first component by difference - and what makes each of them a separate document is the particular reagent that does the job cleanly. Formic acid with zinc chloride is the one that removes polyacrylonitrile while leaving wool and other animal hair, cotton, flax, ramie and polyester essentially unattacked, which is why a single reagent covers a whole set of blends here. The reason the measurement matters is commercial rather than technical: the fibre composition printed on a garment label is what the customer is paying for and what the customs authority and the market regulator check, and a blend declared as half wool that turns out to be a third is misdescription with real consequences in an export trade. The standard specifies the method for determining the fibre content of mixtures of acrylic with certain other fibres, after non-fibrous matter has been removed, and applies to binary mixtures of acrylic with wool, other animal hair, cotton, flax, ramie and polyester. It is short because it leans on GB/T 2910.1 for the general procedure and adds only what is specific to this reagent - the composition of the solution, the 70 degrees C bath, the fifteen minutes of shaking, the washing sequence and the d correction factors for each partner fibre. Precision is stated plainly: on a homogeneous mixture the confidence limits of a result at the 95 per cent level do not exceed plus or minus 2 per cent.

This standard specifies a method, using formic acid and zinc chloride, for determining the fibre content of mixtures of acrylic fibre with certain other fibres after non-fibrous matter has been removed.

This standard applies to binary mixtures of acrylic fibre with wool, with other animal hair fibres, with cotton, with flax, with ramie and with polyester fibre.

2 Normative references

The following document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition (including all amendments) applies.

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

3 Principle

The acrylic fibre is dissolved out of a mixture of known dry mass by means of a solution of formic acid and zinc chloride. The residue is collected, washed, dried and weighed, and its

corrected mass is expressed as a percentage of the dry mass of the mixture. The mass percentage of the acrylic fibre is obtained by difference.

4 Reagents

Use the reagents specified in GB/T 2910.1 and in 4.1 and 4.2 of this standard.

4.1 Formic acid / zinc chloride

Take 20 g of anhydrous zinc chloride (mass fraction greater than 98 per cent) and 68 g of anhydrous formic acid, and add water to make up to 100 g.

4.2 Dilute ammonia solution

Take 20 mL of concentrated ammonia solution (density 0.880 g/mL) and dilute with water to 1 L.

5 Equipment

Use the equipment specified in GB/T 2910.1 and in 5.1 and 5.2 of this standard.

5.1 Stoppered conical flask: capacity not less than 250 mL.

5.2 Constant temperature water bath shaker: able to hold the temperature of the conical flask at 70 degrees C plus or minus 2 degrees C.

6 Test procedure

Follow the general procedure specified in GB/T 2910.1. Prepare at least two test specimens, each of not less than 1 g, then proceed as follows.

Measure out the formic acid / zinc chloride solution (4.1), the quantity being calculated as 150 mL of the solution (4.1) for each gram of test specimen, and add it to the conical flask. When it has been preheated to 70 degrees C plus or minus 2 degrees C, place the specimen in the conical flask, put on the stopper and shake the flask so that the specimen is thoroughly wetted, then shake it on the constant temperature water bath shaker at 70 degrees C plus or minus 2 degrees C for 15 min. Filter through a glass sintered crucible of known mass, wash the remaining fibre three times with a small quantity of formic acid / zinc chloride solution (4.1) at the same temperature, then wash it four to five times with water at 70 degrees C, then neutralise and wash it twice with 100 mL of dilute ammonia solution (4.2), leaving the residue immersed in the solution for 10 min, and wash again with water; at each washing let the liquid drain by gravity first and then draw it off by suction. Finally dry, cool and weigh the crucible and the residue.

7 Calculation and expression of the results

The calculation and expression of the results are carried out as specified in GB/T 2910.1.

The value of d for wool and other animal fibres is 1.01, the value of d for cotton is 1.03, the value of d for flax is 1.07, and the values of d for ramie and for polyester fibre are both 1.00.

If the difference between the results obtained on the two test specimens is greater than 1 per cent, a third specimen shall be tested and the result expressed as the mean of the three results.

8 Precision

For a homogeneous mixture of textile materials, the confidence limits of the results obtained by this standard at the 95 per cent confidence level do not exceed plus or minus 2 per cent.

9 Test report

The test report shall contain the following: a) the number of this standard; b) a detailed description, where a special pre-treatment has been used to remove size or finishing agents; c) the results of the determination of all the components of the mixture, or of one single component; d) a statement that the above results are based on: 1) the net dry mass percentage; 2) the mass percentage including the conditioned moisture regain; 3) the mass percentage including the conditioned moisture regain and the loss of fibre during pre-treatment; 4) the mass percentage including the conditioned moisture regain and the proportion of non-fibrous matter removed.