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Cotton fibres — Test method for sugar content — Spectrophotometry

Fibres de coton — Méthode d'essai pour la teneur en sucre — Spectrophotométrie

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 38, *Textiles*, Subcommittee SC 23, *Fibres and yarns*.

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Introduction

Cotton fibre with normal sugar content might not affect the spinning process. If the sugar content is too high, it might cause storage mildew and metamorphism. During the spinning process, it might also cause twining and breakage, and lower yarn quality and production efficiency. Spectrophotometry is used as a quantitative determination method to detect the total sugar content, and 3,5-dihydroxytoluene-sulfuric acid solution is used as the colour developer. This International Standard supplies the basic information for sugar content of cotton fibres.

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Cotton fibres — Test method for sugar content — Spectrophotometry

WARNING — The use of this International Standard might involve the use of hazardous materials, operations, and equipment. This International Standard does not purport to address all the safety risks associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of local regulatory limitations prior to use.

1 Scope

This International Standard specifies a test method to determine the total sugar content in cotton fibres. Spectrophotometry is used as a quantitative determination method, and 3,5-dihydroxytoluene-sulfuric acid solution is used as a colour developer. This International Standard is applicable to cotton fibres.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139:2005, *Textiles — Standard atmospheres for conditioning and testing*

ISO 1130:1975, *Textile fibres — Some methods of sampling for testing*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 4793:1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*

3 Terms and definitions

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

3.1
percentage of sugars
percentage content of total sugars contained in cotton fibres (including reducing sugar and non-reducing sugar) in the total mass of cotton fibres under the standard atmosphere

4 Principle

Under the action of the non-ionic surfactant (fatty acid alkanolamide), sugars in cotton fibres are dissolved in an aqueous solution, then degraded into furfural derivatives in concentrated acid medium (H_2SO_4). They are later combined with 3,5-dihydroxytoluene to form an orange-yellow complex. Quantify the content of sugars in the cotton fibres by the spectrophotometric method in comparison with the calibration curve at the wavelength of 425 nm.

5 Apparatus

5.1 Spectrophotometer, with a wavelength range of 200 nm to 800 nm.

5.2 Electronic balance, selected from the following.

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