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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Length measurement of wool type fibres - Random beard image
method**

毛型纤维长度测量法 随机须丛影像法

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents" drafting: Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Fiber Standardization Technical Committee (SAC/TC513): This document is drafted by: Donghua University, Shanghai Institute of Quality Supervision and Inspection Technology, Shandong Nanshan Zhishang Technology Co., Ltd., Jiangsu Sunshine Group Co., Ltd., Jiangsu Danwool Textile Co., Ltd., Zhejiang Sci-tech University, Ordos Resources Co., Ltd., Datong City Zhongyin Textile Technology Co., Ltd., Laizhou Electronic Instrument Co., Ltd., Xi'an Polytechnic University, Standard Technical Service (Shanghai) Co., Ltd: Division, Henan Institute of Engineering, Shanghai Institute of Electrical Engineering: The main drafters of this document: Li Weidong, Shen Hua, Wang Fumei, Hu Hairong, Wu Meiqin, Heng Chong, Zhao Liang, Pan Feng, Liu Gangzhong, He Liang, Wang You, Zhao Lin, Zhang Xiangdong, Sun Runjun, Zhang Xuebo, Tu Lexi, Su Jian, Cao Shengbin, Yu Jinlin, Liu Shuangsheng: Measuring hair fiber length Random whisker image method

1 Scope

China's national method for measuring the length of wool type fibres by the random beard image method. Fibre length determines what a wool can be spun into and what it is worth, and measuring it has always been laborious: the classical methods involve laying out individual fibres or combing an array by hand. The beard method automates it. A tuft of fibres is clamped and combed so that the fibres project as a beard from the clamp, and the beard is imaged; because the fibres were caught at random points along their length, the density of fibres at each distance from the clamp gives the length distribution by a straightforward statistical relation. Imaging replaces the optical scanning of earlier instruments and gives the whole distribution in seconds rather than the mean alone - which matters because two wools with the same average length and different distributions behave quite differently in a spinning mill.

This document describes a method for measuring the length of hair-type fibers using the random whisker image method: This document is applicable to the determination of the length of fibers in natural or white wool-type fiber strips of sheep wool, wool-type chemical fibers, velvet fibers, hemp and spun silk:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document:

GB/T 6529 Standard atmosphere for textile humidity conditioning and testing

GB/T 8170 Numerical rounding off rules and expression and determination of limit values

FZ/T 21004 Domestic fine wool and its improved wool top

3 Terms and Definitions

The following terms and definitions apply to this document: 3:1 randomdual-beard After clamping any cross-section of the fiber strip and combing the floating fibers on both sides, the thickest fiber in the middle of the fiber strip, gradually thinning on both sides and straightening to both sides dimension bundle: 3:2 image method imagemethod A method of analyzing the mass distribution of fiber aggregates through the light intensity of each point in the light transmission or reflection image: 3:

3 Fiber length measurement method using double-ended random whiskers as samples and digital camera CCD as photoelectric sensor:

4 Principles

Move the double-ended random whiskers into the photoelectric fiber length detector to obtain the light transmission intensity at each point on the whisker plane: by every point of the whiskers The light transmittance and fiber optic parameters are used to calculate the mass of fibers stacked at this point, and then integrated along the cross-section of the whiskers and normalized to obtain the results shown in Figure 1: Relative linear density curves on one side of the double-ended random whiskers shown: