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

GB/T 20393-2024

Replacing GB/T 20393-2006

**General technical requirements for products with natural color
cotton and mixture of natural color cotton**

天然彩色棉制品及含天然彩色棉制品通用技术要求

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Table of Contents

1 Scope
2 Normative references
3 Terms and definitions
4 Requirements
5 Test methods
6 Inspection rules
7 Instructions for use, packaging, transport and storage
8 Other matters
Annex A (normative) Test method for the quantitative analysis of products blended from naturally coloured cotton fibre and white cotton

1 Scope

This document lays down the quality requirements, the inspection rules and the marking requirements for products made of naturally coloured cotton and for products containing naturally coloured cotton, and describes the corresponding test methods.

This document applies to products in which naturally coloured cotton is blended with other fibres.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through the normative references made to them in the text. For dated references, only the edition corresponding to that date applies to this document; for undated references, the latest edition, including all amendments, applies.

GB/T 250 Textiles - Tests for colour fastness - Grey scale for assessing change in colour; GB/T 2912.1 Textiles - Determination of formaldehyde - Part 1: Free and hydrolysed formaldehyde (water extraction method); GB/T 3920 Textiles - Tests for colour fastness - Colour fastness to rubbing; GB/T 3921-2008 Textiles - Tests for colour fastness - Colour fastness to washing with soap; GB/T 3922 Textiles - Tests for colour fastness - Colour fastness to perspiration; GB/T 4802.1-2008 Textiles - Determination of the pilling propensity of fabrics - Part 1: Circular locus method; GB/T 4856 Packaging of knitted and cotton goods; GB/T 5296.4 Instructions for use of consumer products - Part 4: Textiles and apparel; GB/T 5713 Textiles - Tests for colour fastness - Colour fastness to water; GB/T 7573 Textiles - Determination of pH of the aqueous extract; GB/T 8170 Rules of rounding

off for numerical values and expression and judgement of limiting values; GB/T 8427-2019 Textiles - Tests for colour fastness - Colour fastness to artificial light: Xenon arc; GB/T 8628 Textiles - Preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change; GB/T 8629-2017 Textiles - Domestic washing and drying procedures for textile testing; GB/T 8630 Textiles - Determination of dimensional change in washing and drying; GB/T 17592 Textiles - Determination of banned azo colorants; GB/T 17593.1 Textiles - Determination of heavy metals - Part 1: Atomic absorption spectrophotometry; GB 18401-2010 National general safety technical code for textile products; GB/T 19976-2005 Textiles - Determination of bursting strength - Steel ball method; GB/T 23344 Textiles - Determination of 4-aminoazobenzene; GB/T 24121 Textile products - Detection method for broken needles and similar residues; GB/T 29862 Textiles - Identification of fibre content; GB 31701 Safety technical code for infants and children textile products; GB/T 42701 Textiles - Identification of naturally coloured cotton - Chemical colour development method.

3 Terms and definitions

The following terms and definitions apply to this document.

- 3.1 Naturally coloured cotton. Cotton whose fibre itself possesses a natural colour.
- 3.2 Product with naturally coloured cotton. A fibre product containing thirty per cent or more of naturally coloured cotton fibre.
- 3.3 Product containing naturally coloured cotton. A fibre product containing less than thirty per cent of naturally coloured cotton fibre.

4 Requirements

4.1 Colour difference. For products with naturally coloured cotton and for products containing naturally coloured cotton the colour difference shall be not lower than grade 3-4.

4.2 Intrinsic quality. 4.2.1 The physical and chemical performance indices of products with naturally coloured cotton and of products containing naturally coloured cotton shall follow Table 1.

Table 1 sets, item by item, the technical requirement for each property. The fibre content tolerance is that of GB/T 29862. The dimensional change on washing is expressed as a percentage and is fixed separately for knitted fabric, lengthwise and widthwise, and for woven fabric, warpwise and weftwise: for knitted fabric the permitted range is minus 7.0 to 2.0 in both directions, for woven fabric minus 4.5 to 1.5 warpwise and minus 4.0 to 1.5 weftwise. Pilling is graded and bursting strength is expressed in newtons, with separate values for woven fabric, single-face knitted fabric and double-face knitted fabric; the printed table did not survive digitisation cleanly at that point, so the figures are not reproduced here. Colour fastness to perspiration and colour fastness to water each require grade 3-4 or

better for change in colour and grade 3 or better for staining; colour fastness to rubbing requires grade 3-4 or better dry and grade 3 or better wet; colour fastness to washing requires grade 3 or better for both change in colour and staining; colour fastness to light requires grade 3 or better. Formaldehyde content, pH, odour and azo colorants that release carcinogenic aromatic amines are all governed by GB 18401. Extractable heavy metals, in milligrams per kilogram, are limited to 1.0 for lead, 2.0 for chromium, 4.0 for nickel and 50.0 for copper. Sharp metal objects such as needles shall not be detected.

4.2.2 Products with naturally coloured cotton and products containing naturally coloured cotton that are used by children and infants shall in addition comply with GB 31701.

4.2.3 Shorts and brassiere-type products are not assessed for dimensional change on washing.

4.2.4 Openwork products and products containing elastane are not assessed for bursting strength.

4.2.5 The individual indices of intrinsic quality are minimum quality requirements; where the corresponding item in the product standard is set higher than this requirement, the index of the product standard governs.

4.3 Other requirements. Besides meeting the requirements set out above, products with naturally coloured cotton and products containing naturally coloured cotton shall also meet the requirements of the relevant product standards.

4.4 Appearance quality. Appearance quality follows the provisions of the relevant product standard.

5 Test methods

5.1 Colour difference. When the degree of colour difference is assessed, the parts being compared shall lie in the same yarn direction. The incident light shall meet the fabric surface at an angle of 45°, the direction of observation shall be perpendicular to the fabric surface, the assessment is made by eye at a distance of 60 cm, and the result is compared against the GB/T 250 grey scale.

5.2 Fibre content. The qualitative identification of naturally coloured cotton follows GB/T 42701; the determination of the blend content of naturally coloured cotton with white cotton follows Annex A. Other fibre components follow the corresponding standards.

5.3 Dimensional change on washing. Determined according to GB/T 8628, GB/T 8629 and GB/T 8630. The washing procedure is procedure 4N of GB/T 8629-2017 and the drying procedure is method A of GB/T 8629-2017.

5.4 Pilling. Carried out according to parameter E of GB/T 4802.1-2008.

5.5 Bursting strength. Carried out according to GB/T 19976-2005, with a steel ball of

diameter (38 +/- 0.02) mm.

5.6 Colour fastness to perspiration. Carried out according to GB/T 3922.

5.7 Colour fastness to water. Carried out according to GB/T 5713.

5.8 Colour fastness to rubbing. Carried out according to GB/T 3920; for knitted fabric only the lengthwise direction is tested.

5.9 Colour fastness to washing. Carried out according to test method A(1) of GB/T 3921-2008.

5.10 Colour fastness to light. Carried out according to method 3 of GB/T 8427-2019.

5.11 Formaldehyde content. Carried out according to GB/T 2912.1.

5.12 pH. Carried out according to GB/T 7573.

5.13 Odour. Carried out according to 6.7 of GB 18401-2010.

5.14 Azo colorants that release carcinogenic aromatic amines. Carried out according to GB/T 17592 and GB/T 23344. Note: testing is first done according to GB/T 17592; when aniline and/or 1,4-phenylenediamine is detected, 4-aminoazobenzene is then determined according to GB/T 23344.

5.15 Extractable heavy metals. Carried out according to GB/T 17593.1.

5.16 Sharp metal objects such as needles. Carried out according to GB/T 24121.

6 Inspection rules

6.1 Sampling rules. The sampling quantity for products with naturally coloured cotton and products containing naturally coloured cotton is three pieces (or bolts); the sampling rules for intrinsic quality and appearance quality follow the relevant product standard. Where the number of samples is insufficient, the sampling quantity may be increased.

6.2 Judgement of a lot. 6.2.1 If every property of the product conforms to 4.2, the lot is judged to conform; otherwise the lot is judged not to conform. If the product has properties beyond those set out in 4.2, these shall conform to the relevant product standard and evaluation requirements before the lot can be judged to conform; otherwise the lot is judged not to conform.

6.2.2 Judgement of the result: when everything is judged to conform under 6.2.1, the lot conforms.

6.3 Judgement of a single item. Where the number of items inspected is below the sampling quantity used for judging a lot, only the sample inspected is judged, following 4.2, and this shall be stated in the inspection report.