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Knitted T-shirt

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Knitted T-shirt

1 Scope

This document specifies the product size, technical requirements, sampling rules, judgment rules, product instructions, packaging, transportation and storage requirements of knitted T-shirts, and describes the corresponding test methods.

This document applies to the identification of the quality of various types of knitted T-shirts made mainly of knitted fabrics.

This document does not apply to knitted T-shirts for infants and young children aged 36 months and below.

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 250 Textiles - Tests for colour fastness - Grey scale for assessing change in colour

GB/T 251 Textiles - Tests for colour fastness - Grey scale for assessing staining

GB/T 1335 (all parts) Standard sizing systems for garments

GB/T 2910 (all parts) Textiles - Quantitative chemical analysis

GB/T 2912.1 Textiles - Determination of formaldehyde - Part 1: Free and hydrolyzed 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 or soap and soda

GB/T 3922 Textiles - Tests for colour fastness - Colour fastness to perspiration

GB/T 4802.1-2008 Textiles - Determination of fabric propensity for fuzzing and pilling - Part 1: Circular locus method

GB/T 4802.3 Textiles - Determination of fabric propensity to surface fuzzing and to pilling - Part 3: Pilling box method

GB/T 4856 Package of cotton goods

GB/T 5296.4 Instructions for use of products of consumer interest - Part 4: Textiles and apparel

GB/T 5711 Textiles - Tests for colour fastness - Colour fastness to drycleaning using perchloroethylene solvent

GB/T 5713 Textiles - Tests for colour fastness - Colour fastness to water

GB/T 6529 Textiles - Standard atmospheres for conditioning and testing

GB/T 7573 Textiles - Determination of pH of aqueous extract

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

GB/T 8427-2019 Textiles - Tests for color fastness - Color fastness to artificial light: Xenon arc

GB/T 8629-2017 Textiles - Domestic washing and drying procedures for textile testing

GB/T 8878 Knitted underwear

GB/T 14576 Textiles - Tests for colour fastness - Colour fastness to light of textiles wetted with artificial perspiration

GB/T 14801 Test method for skewness and bow in woven and knitted fabrics

GB/T 17592 Textiles - Determination of the banned azo colourants

GB 18401 National general safety technical code for textile products

GB/T 19976-2005 Textiles - Determination of bursting strength - Steel ball method

GB/T 29862 Textiles - Identification of fiber content

GB/T 31127-2014 Textiles - Tests for colour fastness - Colour fastness to transfer in joints

GB 31701 The safety technical code for infants and children textile products

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

FZ/T 01026 Textiles - Quantitative chemical analysis - Multinary fibre mixtures

FZ/T 01057 (all parts) Test method for identification of textile fibers

FZ/T 01101 Textiles test method - Fiber content - Quantitative physical analysis

FZ/T 70014 A series of size of knitted T-shirt

FZ/T 80007.3-2006 Dry wash resistance test method for garments used adhesive interlining

GSB 16-1523 Pilling standard of knitted fabric

GSB 16-2159 Standard depth sample card for knitted products (1/12)

GSB 16-2500 Defect appearance replicas of knitted fabric

GSB 16-2922 Pilling standard of carded wool knitwear

GSB 16-2923 Pilling standard of combed wool knitwear

3 Terms and definitions

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

3.1

fluorescence color

The color that certain substances exhibit when they absorb incident light of a certain wavelength and are excited to emit visible light.

NOTE: The color that appears fluorescent after being irradiated by ultraviolet light.

4 Product size

According to the provisions of FZ/T 70014 or GB/T 1335 (all parts). The sizes that exceed the standard range shall be increased or decreased in sequence according to the grade values and principles specified in the standard.

5 Requirements

5.1 Grading regulations

5.1.1 The quality grades are divided into superior products, first-class products and qualified products.

5.1.2 The internal quality is graded by batch, and the appearance quality is graded by piece. It is graded by the lowest grade of the two.

6.1.1.2 Before the tests of dimensional change rate after washing and distortion rate after washing, the humidity shall be adjusted according to the standard atmosphere specified in GB/T 6529, and the test can be carried out after the humidity adjustment meets the requirements.

6.1.2 Test methods

6.1.2.1 Fiber content

According to the provisions of FZ/T 01057 (all parts), GB/T 2910 (all parts), GB/T 38015, FZ/T 01026, FZ/T 01101, etc.

6.1.2.2 Formaldehyde content

According to the provisions of GB/T 2912.1.

6.1.2.3 pH value

According to the provisions of GB/T 7573.

6.1.2.4 Odor

According to the provisions of GB 18401.

6.1.2.5 Decomposable carcinogenic aromatic amine dyes

According to the provisions of GB/T 17592.

6.1.2.6 Bursting strength

According to the provisions of GB/T 19976-2005, the diameter of the steel ball is (38 $\pm$ 0.02) mm.

6.1.2.7 Dimensional change rate after washing

6.1.2.7.1 Measurement position

The vertical length of the garment is calculated based on the average value of the front, back, left and right sides of the garment, and the horizontal length of the garment is calculated based on the measurement value of the front side. When measuring, marks are made for measurement after washing. The measurement position is shown in Figure 1.

6.1.2.7.5 Result calculation

Calculate the vertical and horizontal dimensional change rates after washing according to formula (1), with a negative sign (-) indicating dimensional shrinkage and a positive sign (+) indicating dimensional elongation (reverse expansion). Take the arithmetic mean of the three samples as the test result. If there are both shrinkage and reverse expansion test results, take the arithmetic mean of the two shrinkage or elongation samples as the test result. The final result is rounded off according to the provisions of GB/T 8170 and retain one decimal place.

$$A = \frac{L_1 - L_0}{L_0} \times 100\% \quad \dots\dots\dots (1)$$

where:

A - the vertical or horizontal dimensional change rate after washing;

L_1 - the vertical or horizontal dimensional average value after washing, in centimeters (cm);

L_0 - the vertical or horizontal dimensional average value before washing, in centimeters (cm).

6.1.2.8 Dimensional change rate after dry cleaning

Carry out according to the provisions of 8.1 conventional dry cleaning method in FZ/T 80007.3-2006, and the number of test pieces is 1. Measure according to the test method for dimensional change rate after washing.

6.1.2.9 Distortion rate after washing

6.1.2.9.1 Washing procedure and drying method

Carry out according to the washing and drying methods specified in 6.1.2.7.

6.1.2.9.2 Measurement method

Lay the washed garment on a smooth table and gently flatten it by hand for measurement. Measure on the side of each garment with the largest degree of distortion. The distortion part of the garment is shown in Figure 2. All data are calculated after washing. If distortion exists before washing, it shall be marked and noted in the report.

Carry out according to the provisions of GB/T 3922.

6.1.2.13 Color fastness to rubbing

Carry out according to the provisions of GB/T 3920, only vertical direction.

6.1.2.14 Color fastness to light

Carry out according to the provisions of 8.3.4 Method 3 in GB/T 8427-2019. When the difference in the grading of each stage exceeds half a grade, the average color fastness to light shall be used for judgment.

6.1.2.15 Color fastness to dry cleaning

Carry out according to the provisions of GB/T 5711.

6.1.2.16 Color fastness to transfer in joints

Carry out according to the provisions of 7.1 Method A in GB/T 31127-2014. For fabrics or products with added teeth (strips) whose sample size does not meet the requirement of $(100 \pm 2) \text{ mm} \times (40 \pm 2) \text{ mm}$, it can be cut according to the maximum size of the actual sample, and then two samples can be sewn together along the short sides to form a combined sample.

6.1.2.17 Color fastness to light of textiles wetted with artificial perspiration

Carry out according to the provisions of GB/T 14576.

6.1.2.18 Degree of staining after washing with detergent

Prepare and wash the sample according to the conditions of Method A (1) in Table 2 of GB/T 3921-2008, and then filter with qualitative filter paper (medium speed) to remove impurities in the residual soap solution, and pour the filtered soap solution into a colorimetric tube with a diameter of 25 mm. Pour the unwashed soap solution with the same temperature as the test temperature into another colorimetric tube (diameter of 25 mm) as a reference sample. Under the D65 standard light source, with white cardboard without fluorescent brightener as the background, the cardboard is placed on the grading rack, and the degree of staining after washing with detergent is evaluated according to the requirements of GB/T 251. The amount of soap solution poured into the colorimetric tube is about 50 mL. During the grading, the distance between the colorimetric tube and the white cardboard is about 10 cm to avoid interference from the shadow of the colorimetric tube. The grading shall be completed within 15 minutes.

6.1.2.19 Pilling

Carry out according to the provisions of parameter E in Table 1 of GB/T 4802.1-2008, the grading is based on the fabric style and pilling shape according to the requirements of GSB 16-1523.

8.1.1.1 If one or more items of internal quality do not meet the requirements of 5.2, the batch of products shall be judged as unqualified. Among them, if the color fastness item does not meet the requirements, the batch of products shall be judged as unqualified by color.

8.1.1.2 If the inspection results of the appearance quality after washing indicate that at least 2 pieces meet the requirements, the batch of products shall be judged as qualified, otherwise the batch of products shall be judged as unqualified.

8.1.2 Appearance quality

For the appearance quality, it shall calculate the non-conforming product rate by type and color. If the non-conforming product rate is within 5 %, the batch of products is judged as qualified; if the non-conforming product rate is above 5 %, the batch of products is judged as unqualified.

8.1.3 Result judgment

If the batch of products is qualified according to 8.1.1 and 8.1.2, it is judged as qualified.

8.2 Single piece judgment

If the number of inspected products is lower than the number of sampling pieces for batch judgment, the internal quality and appearance quality shall be judged only for the inspected products according to 8.1, and shall be noted in the inspection report.

8.3 Others

There shall be no defects that seriously affect the performance of wearing.

8.4 Re-inspection

8.4.1 If any party has objections to the inspection results, it may request re-inspection.

8.4.2 The re-inspection results shall be implemented in accordance with the provisions of 8.1, 8.2 and 8.3, and the judgment shall be based on the re-inspection results.

9 Product instructions, packaging, transportation and storage

9.1 Product instructions shall comply with the provisions of GB/T 5296.4, and children's products shall comply with the provisions of GB/T 5296.4 and GB 31701.

9.2 Product packaging shall comply with the provisions of GB/T 4856 or agreements.

9.3 Products shall be transported in a moisture-proof, fire-proof and pollution-proof manner.

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