











FZ/T 73017—2014

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*

FZ/T 01026, *Textiles — Quantitative chemical analysis — Quaternary fibre mixtures*

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

FZ/T 01095, *Textiles — Test method of elastane fibre content*

FZ/T 01101, *Textile test method — Fiber content — Quantitative physical analysis*

GSB 16-1523, *Pilling standard of knitted fabric*

GSB 16-2159, *Colour cards of standard depths for knitted products (1/12)*

GSB 16-2500, *Defect appearance replicas of knitted fabric*

### 3 Product size

The size of knitted homewear shall be in accordance with GB/T 6411 or GB/T 1335(all parts).

### 4 Requirements

#### 4.1 Required Contents

The requirements include inherent quality and appearance quality. The inherent quality includes bursting strength, fiber content, formaldehyde content, pH value, odor, decomposable carcinogenic aromatic amine dyes, the dimensional stability to washing, spirality after washing, colour fastness to washing, colour fastness to water, colour fastness to perspiration, colour fastness to rubbing, colour fastness to transfer in joints, pilling, appearance quality after washing, etc. The appearance quality includes appearance defects, dimensional deviation of specifications, dimensional differences of symmetrical parts, sewing requirements, etc.

#### 4.2 Grading criteria

4.2.1 The quality classification includes superior grade, first grade, and qualified grade.

4.2.2 The inherent quality is classified by batch, and the appearance quality is classified by piece. The grade of the product shall be determined by the lower grade of the two.

4.2.3 The lowest testing result in terms of inherent quality shall determine the final grade of inherent quality of the lot.

4.2.4 In case of appearance quality of different grades in one product, the grade classification shall be graded according to the lowest grade. Only two appearance defects with extreme in the same grade are allowed for one piece of sample, otherwise, the sample shall be degraded.

#### 4.3 Inherent quality Requirements

4.3.1 The requirements of inherent quality are shown in Table 1.

**Table 1 Requirements of inherent quality**

Items	Superior grade	First grade	Qualified grade
Bursting strength /N $\geq$	250		
Fiber content /%	Conform to GB/T 29862		
Formaldehyde content / (mg/kg)	Conform to GB18401		
pH value			

Odor					
Decomposable carcinogenic aromatic amine dyes / (mg/kg)					
Dimensional stability to washing / %	Fabric with a cellulose fiber content of 50% or more.	Lengthwise $\geq$	-5.0	-7.0	-9.0
		Widthwise $\geq$	-5.0	-8.0	-10.0
	Fabric with a cellulose fiber content of less than 50%	Lengthwise $\geq$	-5.0	-5.0	-7.0
		Widthwise $\geq$	-5.0	-6.0	-7.0
spirality after washing / % $\leq$		Top	4.0	6.0	7.0
		Bottom	3.0	4.0	5.0
Colour fastness to washing with soap or soap and soda /Grade $\geq$		Change in colour	4	3-4	3
		Staining	3-4	3-4	3
Colour fastness to water/Grade $\geq$		Change in colour	4	3-4	3
		Staining	3-4	3	3
Colour fastness to perspiration/Grade $\geq$		Change in colour	4	3-4	3
		Staining	3-4	3	3
Colour fastness to rubbing/Grade $\geq$		Dry	4	3-4	3
		Wet	3	3 (dark 2)	2-3 (dark 2)
Colour fastness to transfer in joints (colour staining)/Grade $\geq$			4-5	4	4
Pilling /Grade $\geq$			3-4	3	2-3
Appearance quality after washing		After washing, no holes on the product, no buttons and decorative accessories falling off, no obvious deformation of product, and colour difference shall not be less than grade 4			
<b>Note:</b> The colour depth is determined according to GSB 16-2159. The colour darker than 1/12 standard depth is regarded as dark colour, and the other colour is regarded as light colour.					

**4.3.2** Elastic fabric refers to the fabric that contains elastic fiber or rib fabric.

**4.3.3** Bursting strength is not applicable to elastic fabric and product with stripe, hollow-out, burn-out and other structural, and the quilting product and multilayered structure product shall be tested as a whole.

**4.3.4** Dimensional stability to washing is not applicable to elastic fabric at widthwise, and not applicable to wrinkled product at the direction of wrinkle.

**4.3.5** The spirality after washing is not applicable to non-straight hem product and robe.

**4.3.6** Pilling is only applicable to the face side of product, and not applicable to hollow-out, cotton fabric, cotton / spandex product and product with face side sanded and fleeced.

**4.3.7** The colour fastness to transfer in joints is only applicable to the products splicing with dark and light colour.

#### 4.4 Appearance quality requirements

##### 4.4.1 Appearance defects

4.4.1.1 Classification requirements of appearance defect are shown in Table 2.

**Table 2 Classification stipulations of appearance defect**

Name of defect	Superior grade	First grade	Qualified grade
Misplaced printed pattern	Not obvious		Obvious
Skewness (%) ( stripe and check)≤	4.0	5.0	6.0
Distance of the button from the buttonhole/cm	0.3		0.5
<b>Note 1:</b> All defects not listed above shall be classified according to GB/T8878.			
<b>Note 2:</b> The appearance defects shall be classified according to GSB 16-2500.			

4.4.1.2 Any appearance defect that is not specified in the standard shall be treated with reference to similar defect.

4.4.1.3 The length of appearance defect and number of appearance defect are the maximum limit value.

#### 4.4.2 Dimensional deviations of specifications

The dimensional deviations of specifications are shown in Table 3.

**Table 3 Dimensional deviations of specifications** Unit: cm

Size range		Superior grade	First grade	Qualified grade
Lengthwise	60cm or more	±1.0	±2.0	±2.5
	Less than 60cm	±1.0	±1.5	±2.0
Widthwise	5 cm or more	±1.0	±1.5	±2.0
	Less than 5 cm	±0.5	±0.8	±1.0

#### 4.4.3 Dimensional differences of symmetrical parts

Dimensional differences of symmetrical positions are shown in Table 4.

**Table 4 Dimensional differences between symmetrical positions** Unit: cm

Item	Superior grades≤	First grades≤	Qualified grades≤
≤5cm	0.2	0.3	0.4
>5cm and ≤15cm	0.5	0.5	0.8
>15cm and ≤76cm	0.8	1.0	1.2
>76cm	1.2	1.5	1.5

#### 4.4.4 Sewing requirements (no grade)

4.4.4.1 Reinforce parts: Joining shoulder seam, crotch seam joint of trousers, seam end.

4.4.4.2 Reinforce method: Using four lines or five lines overlock machine, twin needles, back stitch, bar tack, or adding accessories.

4.4.4.3 Sewing shall be firm, and the stitches shall be straight, smooth, and with proper tightness.

4.4.4.4 The collar type of the product shall be correct, the front fly shall be straight, zipper shall be smooth, ironing shall be flat, thread shall be cleaned, and no sundries.

4.4.4.5 Quilted stitches shall be straight, and the thickness of the quilted product shall be uniform.

4.4.4.6 Plush and light and shade grids fabric shall be consistent on whole garment, but except for special designs.

4.4.4.7 Patterned fabric shall be based on the main pattern, and the direction the whole garment shall be consistent.

## 5 Test



## 5.1 Inherent quality inspection

### 5.1.1 Preparation and test condition

5.1.1.1 Test specimens shall have no defect that may affect the test.

5.1.1.2 The specimen shall be conditioned according to the standard atmosphere specified in GB/T 6529 before dimensional stability to washing and spirality after washing..

### 5.1.2 Test method

#### 5.1.2.1 Bursting strength

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

#### 5.1.2.2 Fiber content

It is tested according to FZ/T 01057(all parts)、GB/T 2910(all parts)、FZ/T 01026、FZ/T 01095、FZ/T 01101. Calculations of fiber content shall be combined with conventional moisture regain specified in GB 9994.

#### 5.1.2.3 Formaldehyde content

It is tested according to GB/T 2912.1.

#### 5.1.2.4 pH value

It is tested according to GB/T 7573.

#### 5.1.2.5 Odor

It is tested according to GB18401.

#### 5.1.2.6 Decomposable carcinogenic aromatic amine dye

It is tested according to GB/T 17592.

#### 5.1.2.7 Dimensional stability to washing

##### 5.1.2.7.1 Measuring position

For upper clothing, robe and skirt, the body length and chest girth are measured as lengthwise and widthwise respectively (button up if have). The calculation basis of body length (lengthwise) is the average of the four measured values includes left and right on both front side and back side. The calculation basis of chest girth (widthwise) is the measured values of the front side. For trousers, the calculation basis of lengthwise is the measured values of length of trousers on the left leg and right leg, and the calculation basis of widthwise is the measured values of the mid-leg width of the left leg and right leg. Marking is made on the products when it is measured, so that it can be measured after washing. The measuring positions of upper clothing are shown in figure 1, the measuring positions of the trousers are shown in figure 2, the measuring positions of the gown are shown in figure 3, the measuring positions of the skirt are shown in figure 4.



Figure 1 Measuring positions of upper clothing before and after washing



Figure 2 Measuring positions of trousers before and after washing



Figure 3 Measuring positions of robe before and after washing

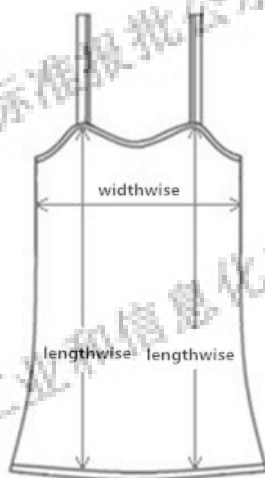


Figure 4 Measuring positions of skirt before and after washing

#### 5.1.2.7.2 Measurement instruction for dimensional washing

Measurement instruction for dimensional washing is shown in Table 5.

Table 5 Measurement instruction for dimensional washing

Category	Positions	Measurement method
Upper clothing, skirt and robe	lengthwise	Raglan sleeve: Measure from the middle of the shoulder width to the hem vertically. Set-in sleeve: Measure from the highest point on the shoulder seam to the hem vertically.
	widthwise	Horizontally measure at 5cm down from the intersection point of the armhole seam and the side seam.
Trousers	lengthwise	Vertically measure from quarter of the waist down to the hem.
	widthwise	Across measure at 10cm down from cross crotch measuring line

#### 5.1.2.7.3 Washing and drying

**5.1.2.7.3.1 Washing:** According to GB/T 8629-2001. Generally, select the washing program 5A. However, if products with "hand wash" indication, select the washing program "hand wash". The number of test pieces is three.

**5.1.2.7.3.2 Drying:** Line dry. For upper clothing, using the pole to cross the sleeves to keep the chest girth and armhole area straight, and straighten the front and back of the clothes with your hand from the bottom. Trousers, gowns and skirts are hung up in a folded state, and the crotch of trousers are placed on the air pole and kept it flat. Keep the dried samples on a platform for more than 4 hours in an environment with a temperature of  $(20 \pm 2)^\circ\text{C}$  and a relative humidity of  $(65 \pm 4)\%$ , and then tap the crease gently and measure it.

**5.1.2.7.3.3 Result calculation and representation:** Dimensional stability to washing in lengthwise or widthwise is calculated according to formula (1), negative sign (-) indicates a dimensional shrinkage and the positive sign (+) indicates a dimensional elongation (increase). Take the arithmetic mean of all samples as the test result. If there are both shrinkage and elongation (increase) test results, take the arithmetic mean value of two samples of shrinkage (or elongation) as the test result, and the final result is retained one decimal place revised according to GB/T8170.

$$A = \text{错误!} \times 100\% \dots\dots\dots(1)$$

Where:

A is dimensional stability to washing in lengthwise or widthwise, %;

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$L_1$  is mean value of lengthwise or widthwise after washing, unit is centimeter (cm);

$L_0$  is mean value of lengthwise or widthwise before washing, unit is centimeter (cm).

### 5.1.2.8 Spirality after washing

#### 5.1.2.8.1 Washing and drying

Washing and drying are carried out according to test method of dimensional stability to washing.

#### 5.1.2.8.2 Measuring method

Spread out the washed specimen on a smooth countertop and gently pat it flat by hand. Measured position shall be on the side with the greatest skewness of each sample.

#### 5.1.2.8.3 Measuring position

5.1.2.8.3.1 The measuring positions of upper clothing are shown in figure 5.



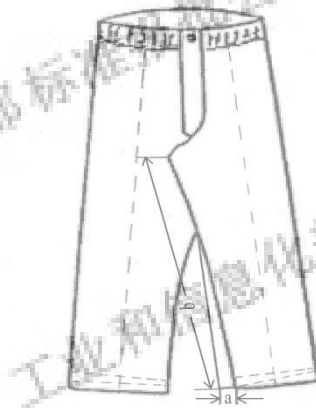
Instructions:

a is the distance between the two points, the one point is the vertical projection point of the intersection of side seam and armhole perpendicular on the bottom edge, and the another point is the intersection point of the side seam and the hem after washing. If necessary, the mark of the intersection point between the side seam and bottom edge should be marked before washing.

b is the vertical distance between the intersection of the side seam and the armhole to bottom edge.

**Figure 5 Example of the measuring positions of the upper clothing**

5.1.2.8.3.2 The measuring positions of the trousers are shown in figure 6.



Instructions:

a is the distance between the two points, the one point is the intersection point of inseam and the hem, and the another point is the intersection point of the washed inseam and the hem. If necessary, the mark of the intersection point between intersecting seam and the edge of the cuff should be made before washing.

b is the distance between the bottom point of the crotch and the hem along the inseam.

**Figure 6 Example of the measuring positions of the trousers**

#### 5.1.2.8.4 The Calculation method of spirality

The spirality is calculated according to formula (2), taking the arithmetic mean of 3 specimens as the test result (the final result is retained one decimal place revised according to GB/T8170).

$$F=a/b \times 100 \dots \dots \dots (2)$$

Where:

F—spirality after washing, %.

#### 5.1.2.9 Appearance quality after washing

Washing and drying are carried out according to test method of dimensional stability to washing, and evaluation combined with table 1.

#### 5.1.2.10 Colour fastness to washing with soap or soap and soda

It is tested according to A(1) method of GB/T 3921-2008.

#### 5.1.2.11 Colour fastness to water

It is tested according to GB/T 5713.

#### 5.1.2.12 Colour fastness to perspiration

It is tested according to GB/T 3922.

#### 5.1.2.13 Colour fastness to rubbing

It is tested according to GB/T 3920, and just do the straight direction of products.

#### 5.1.2.14 Colour fastness to transfer in joints

It is tested according to Annex A.

#### 5.1.2.15 Pilling test

It is tested according to the E method of GB/T 4802.1-2008, and rating is based on the fabric style and pilling shape according to GSB 16-1523 pilling standard of knitted fabric.

## 5.2 Inspection for appearance quality

**5.2.1** Generally, light inspection is used. Use a white fluorescent lamp with a lampshade on it, and the vertical distance between the lampshade and the center of the inspection table is  $80\text{cm} \pm 5\text{cm}$ .

**5.2.2** If the natural light is used, the direction of the light source is the upper left (or right) corner of the north, and do not expose the product to direct sunlight.

**5.2.3** During the inspection, the products shall be spread on the inspection table with a layer of white cloth laid on the table. The inspector shall look squarely at the surface of the product, and the distance between the vision and the product is more than 35cm.

### 5.2.4 Measuring positions and regulations

**5.2.4.1** The measuring positions of Cardigans are shown in Figure 7.

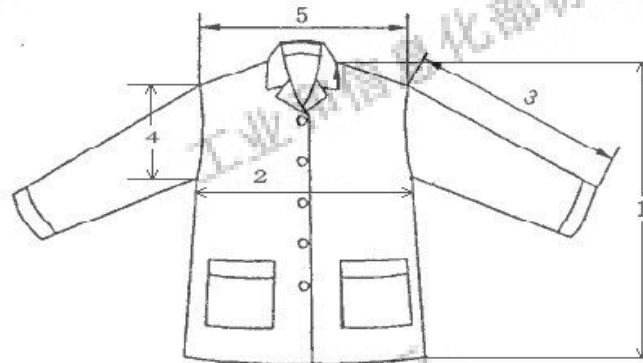
**5.2.4.2** The measuring positions of trousers are shown Figure 8.

**5.2.4.3** The measuring positions of the round-collar short-sleeved shirt are shown in Figure 9.

**5.2.4.4** The measuring positions of the raglan-long-sleeve shirt are shown in Figure 10.

**5.2.4.5** The measuring positions of the robe are shown in Figure 11.

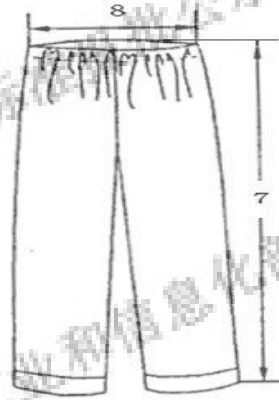
**5.2.4.6** The measuring positions of the skirt are shown in Figure 12.



Instructions:

- 1- body length;
- 2-1/2 chest girth;
- 3-sleeve length;
- 4-armhole
- 5- total shoulder.

**Figure 7 Cardigans**



Instructions:

7-trousers length;

8-1/2 waist girth.

**Figure 8 Trousers**



Instructions:

1- body length;

2-1/2 chest girth;

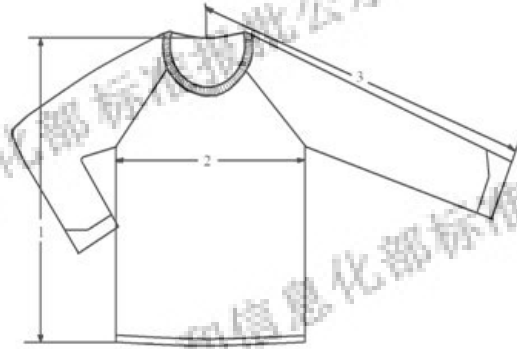
3-sleeve length;

4-armhole;

5-total shoulder width;

6-collar width.

**Figure 9 Round-collar short-sleeved shirt**



Instructions:

- 1- body length;
- 2-1/2 chest girth;
- 3-sleeve length.

**Figure 10 Raglan-long-sleeve shirt**

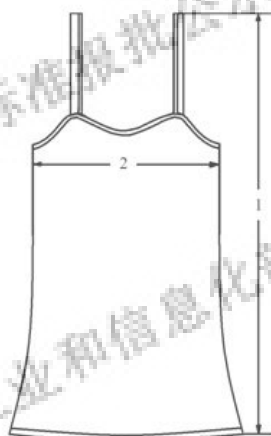


Instructions:

- 1- body length;
- 3-sleeve length;
- 4-armhole.

**Figure 11 Robe**





Instructions:

1-body length;

2-1/2 chest girth.

**Figure 12 Skirt**

5.2.4.7 The measuring requirements for each part are shown in Table 6.

**Table 6 The measuring requirements for each part**

Number	Parts	Method of measurement
1	Body length	Raglan sleeve: Measure from center back neck to the hem vertically. Set-in sleeve: Measure from the high point shoulder seam to the hem vertically. The sling skirt: Measured from the top of the belt to the hem vertically.
2	1/2 chest girth	Measure horizontally at 2 cm down the intersection point of armhole seam and side seam.
3	Sleeve length	Set-in sleeve: Measure from the outer end of the armhole seam to the cuff edge. Raglan sleeve: Measure from the middle of the back collar to the cuff edge.
4	Armhole	Set-in sleeve: Measure from the top of armhole seam to sleeve bottom.
5	Total shoulder width	The distance between the two outer end of armhole seams.
6	Collar width	The distance between the collar seams at both ends.
7	Trousers length	Vertically measure from quarter of the waist down to the pants edge.
8	1/2 waist girth	Horizontally Measure at the middle of the waist band, with the button fastened.

**Note:** The measured values of each part are accurate to 0.1 cm.

## 5.2.5 Test

### 5.2.5.1 Colour difference

It is tested according to GB/T 250.

### 5.2.5.2 Skewness

It is tested according to GB/T 14801.

## 6 Judgment rules

## 6.1 Sampling amount

6.1.1 For the appearance quality, 1%- 3% from each batch of products are randomly taken according to variety and color, but not less than 20 pieces.

6.1.2 For inherent quality, 4 pieces of samples are randomly taken according to variety and colour, and the number of pieces can be increased when insufficient.

## 6.2 Inherent quality

6.2.1 For appearance quality after washing, this batch of products is judged as qualified if at least two samples meet the requirements, otherwise judged unqualified.

6.2.2 The inherent quality is judged according to Clause 4.3, if any one of the required items is disqualified, this batch is judged as unqualified. Among them, if the color fastness items do not meet the requirements, this batch of product is judged as unqualified according to the color.

6.2.3 Products with defects that seriously affect the appearance and performance are not allowed.

## 6.3 Appearance quality

The non-conformity rate of appearance quality is calculated according to the variety and color. If the rate of non-conformity is not more than 5%, this batch of product is judged as qualified. If the rate of non-compliance is above 5%, this batch of product is judged as unqualified.

## 6.4 Re-inspection

6.4.1 If either party has any objection to the result of the test, it may request the re-inspection.

6.4.2 The results of re-inspection shall be carried out in accordance with the provisions of Clause 6.2 and Clause 6.3 of this standard, and the judgment shall be subject to the re-inspection results.

## 7 Instructions for use, packaging, transportation and storage of product

7.1 Instructions for use shall comply with GB 5296.4.

7.2 The packaging shall comply with GB/T 4856 or the agreement.

7.3 Product transportation shall take measures to avoid humidity, fire and pollution.

7.4 Products should be stored in a cool, ventilated, dry and clean warehouse, and attention should be paid to mothproof and mould proof.

**Annex A****(Normative)****Test method for colour fastness to transfer in joints****A.1 Principle**

The sample stitched with two different colors is placed in the soap, and mechanically stirred under the specified time and temperature conditions, and then washed and dried. Finally, the staining of the sample is assessed using the grey scale.

**A.2 Test requirements and preparation**

**A.2.1** Select the joining part of the fabric on the garment, cut a 40mm × 200mm sized sample with the joining seam as the sample center, and make one half of the sample a color for splicing and the other half for another color.

**A.2.2** If there is no suitable part on the garment, the two colour of fabrics with 40mm×100mm can be cut separately on the garment or the same batch of fabric, and the two fabrics were stitched along the short side into a combined sample.

**A.2.3** For sample of very narrowly spliced fabrics or toothed products, cut the largest area on the splicing fabric or disassemble the toothed part, and then stitch the two pieces along the short side into a combined sample.

**A.3 Test procedure**

**A.3.1** The washing test is carried out according to GB/T 3921-2008, and the test conditions are carried out according to A(1).

**A.3.2** The grey scale of GB/T 251 is used to evaluate the staining of the light-colored fabric in the sample.