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Children's athletic shoes

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Foreword

SAC/TC 305 is in charge of this English translation. In case of any doubt about the contents of English translation, the Chinese original shall be considered authoritative.

This document is drafted in accordance with the rules given in the GB/T 1.1—2020 *Directives for standardization — Part 1: Rules for the structure and drafting of standardizing documents*.

This document replaces the QB/T 4331—2012 *Children's athletic shoes*. In addition to a number of structural and editorial changes, the main technical differences between this document and the QB/T 4331—2012 are:

- a) Modify the “normative references” (see Clause 2, Clause 2 of edition 2012) ;
- b) Modify the definitions of “infants' athletic shoes” and “children's athletic shoes” (see 3.1 and 3.2, 3.1 and 3.2 of edition 2012) ;
- c) Delete the definitions of “low upper footwear” (see 3.5 of edition 2012) ;
- d) Delete the “General requirements” and retain the requirements of “labelling” in 2012 edition (see 5.1, 5.1 of edition 2012) ;
- e) Modify the requirements for “appearance quality” (see 5.2, 5.2 of edition 2012);
- f) Modify the requirements and test methods for “upper-sole peeling strength or sidewall-upper peeling strength” (see 5.3.1 and 7.2, 5.3.1 and 6.2 of edition 2012);
- g) Modify the requirements and test methods for “outsole hardness” (see 5.3.6 and 7.7, 5.3.6 and 6.7 of edition 2012) ;
- h) Modify the requirements for “velcro fatigue resistance performance” (see 5.3.8, 5.3.8 of edition 2012) ;
- i) Delete the requirements for “safety performance” (see 5.4 of edition 2012);
- j) Delete “products may trigger risk factors during design, production and use” (see 5.6 and Annex C of edition 2012);
- k) Add the requirements for the width of knife edge during the upper-sole peeling strength or sidewall-upper peeling strength test (see 7.2, 6.2 of edition 2012);
- l) Modify the test methods for “outsole abrasion resistance” (see 7.4, 6.4 of edition 2012);

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m) Modify the test methods for “outsole and midsole adhesion strength” (see 7.8, 6.8 of edition 2012) ;

n) Delete the test methods for “odor”、 “the amount of azo dyes in textile”、 “the amount of azo dyes in leather”、 “the amount of formaldehyde in textile”、 “the amount of formaldehyde in leather”、 “the total amount of heavy metals” (see 6.10~6.15 of edition 2012) ;

o) Delete the “inspection items” (see 7.1 of edition 2012) ;

p) Delete the “azo dyes lists” in Annex A (see Annex A of edition 2012) .

This document was proposed by China National Light Industry Council.

This document was prepared by SAC/TC 305 National Technical Committee 305 on Footwear of Standardization Administration of China.

The previous editions of this document are as follows:

— The first edition was issued in 2012 as QB/T 4331—2012.

— This is the first revised edition.

Children's athletic shoes

1 Scope

This document specifies the requirements, after-sale quality judgment, judgment, inspection rules, marking, packaging, transportation and storage of children's athletic shoes, and it also describes the corresponding test methods, defines the relevant terms and definitions, and lists the product classification.

This document is applicable to the production, inspection and sale of children's and infants' athletic shoes for general use.

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 251 *Textiles—Tests for colour fastness—Grey scale for assessing staining*

GB/T 2703 *Footwear—Vocabulary*

GB/T 3903.1 *Footwear—Test methods for whole shoe—Flexing resistance*

GB/T 3903.2 *Footwear—Test methods for whole shoe—Abrasion resistance*

GB/T 3903.3 *Footwear—General test methods—Peeling strength*

GB/T 3903.4 *Footwear—Test methods for whole shoe—Hardness*

GB/T 3903.5 *Footwear—General test methods—Appearance quality*

GB/T 3903.20 *Footwear—Test methods for accessories: Touch and close fasteners—Peel strength before and after repeated closing*

GB/T 3903.21 *Footwear—Test methods for accessories: Touch and close fasteners—Shear strength before and after repeated closing*

GB/T 21396 *Footwear—Test methods for whole shoe—Upper sole adhesion*

QB/T 1187 *Footwear—Principle of inspection and marking, package, transportation, storage*

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QB/T 2224 *Footwear—Performance requirement for uppers low—temperature flexing resistance*

QB/T 2673 *Footwear—Specification of marking*

QB/T 2882—2007 *Footwear—Test methods for uppers, linings and insoles—Colour fastness to rubbing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 2703 and the following apply.

3.1

infants' athletic shoes

the athletic shoes used for infants (3 years old and below) with the shoe sizes no greater than 170

3.2

children's athletic shoes

the athletic shoes used for children (above 3 years old to 14 years old) with the shoe sizes greater than 170

3.3

primary parts

the outer and forepart of the upper

[Source: GB/T 2703—2017, 2.3.21]

3.4

subsidiary parts

the inner and back part of the upper

[Source: GB/T 2703—2017, 2.3.2, modified]

4 Product classifications

4.1 Classified by upper materials

—Athletic shoes with upper made of genuine leather (including grain leather, split leather);

—Athletic shoes with upper made of imitation leather;

—Athletic shoes with upper made of textile;

—Athletic shoes with upper made of mixture of various materials.

4.2 Classified by end users

- Children's athletic shoes;
- Infants' athletic shoes.

5 Requirements

5.1 Labelling

Labelling shall meet the requirements of QB/T 2673.

5.2 Appearance quality

The appearance quality shall be in accordance with Table 1, where items 1 to 3 and serious defects are major items and others are minor items.

Table 1 Appearance quality

No.	Items	Requirements
1	Upper	The upper made of genuine leather, imitation leather: No crack grain, no crazing, no coating layer peeling off, no decolour, no damage, no lasting margin exposed. No obvious loose grain on primary parts. The upper made of textile: No yarns mixed or floated and obvious stains. There shall be no more than two defects on subsidiary parts of each shoe with an area of more than 10 mm ² .
2	Sole	Clean, no missing materials, no cracks (except for special design).
3	Accessories	Assembled firmly, no obvious defects.

Table 1 (Continued)

No.	Items	Requirements
4	Dimensions on corresponding parts of the same pair of shoes	Vamp length Children's athletic shoes: the vamp length difference ≤ 3.0 mm Infants' athletic shoes: the vamp length difference ≤ 2.5 mm
		Quarter height Children's athletic shoes with low upper: the quarter height difference ≤ 3.0 mm, Children's athletic shoes with other types of upper: the quarter height difference ≤ 5.0 mm, Infants' athletic shoes with low upper: the quarter height difference ≤ 2.5 mm, Infants' athletic shoes with other types of upper: the quarter height difference ≤ 3.5 mm
		Sole Children's athletic shoes with solid sole: the sole length difference ≤ 2.0 mm, the sole width difference ≤ 1.5 mm, the sole thickness difference ≤ 0.5 mm, Children's athletic shoes with microcellular sole (combined sole):

		the sole length difference ≤ 3.5 mm, the sole width difference ≤ 2.5 mm, the sole thickness difference ≤ 1.0 mm, Infants' athletic shoes with solid sole: the sole length difference ≤ 1.5 mm, the sole width difference ≤ 1.0 mm, the sole thickness difference ≤ 0.5 mm, Infants' athletic shoes with microcellular sole (combined sole): the sole length difference ≤ 2.5 mm, the sole width difference ≤ 2.0 mm, the sole thickness difference ≤ 0.5 mm.
5	Back seam	The athletic shoes with low upper: the back seam off center shall be ≤ 2.5 mm; The athletic shoes with other types of upper: the back seam off center shall be ≤ 3.5 mm.
6	Stitching	There shall not be skipped stitching, merged stitching, broken stitching, exposed ground stitching and split stitching at primary parts. There shall be no more than two places of skipped stitching and merged stitching at subsidiary parts for each shoe.
7	Special function	The shoes with photoelectric, sound and other functions shall be well-appointed. Batteries, wires shall not be exposed.
<p>Note 1:</p> <p>For the same pair of children's athletic shoes with solid sole, sole length difference >3.0 mm, sole width difference >2.5 mm, sole thickness difference >1.0 mm are serious defects; For the same pair of children's athletic shoes with microcellular sole (combined sole), sole length difference >4.5 mm, sole width difference >3.5 mm, sole thickness difference >1.5 mm are serious defects; For the same pair of infants' athletic shoes with solid sole, sole length difference >2.5 mm, sole width difference >2.0 mm, sole thickness difference >1.0 mm are serious defects; For the same pair of infants' athletic shoes with microcellular sole (combined sole), sole length difference >3.5 mm, sole width difference >2.5 mm, sole thickness difference >1.0 mm are serious defects;</p> <p>Note 2:</p> <p>For the same pair of children's athletic shoes, vamp length difference >5.0 mm, quarter height difference >4.0 mm for the shoes with low upper, quarter height difference >6.0 mm for the shoes with other types of upper are serious defects; For the same pair of infants' athletic shoes, vamp length difference >4.0 mm, quarter height difference >3.5 mm for the shoes with low upper, quarter height difference >5.0 mm for the shoes with other types of upper are serious defects.</p>		

5.3 Physical and mechanical performance

5.3.1 Upper-sole peeling strength or sidewall-upper peeling strength

5.3.1.1 The test is not applicable to infants' athletic shoes.

5.3.1.2 The test is not applicable to the children's athletic shoes with sewn construction, cemented-sewn construction, and special construction (including rivet nailing etc.). This test shall be carried out on the children's athletic shoes with other construction.

5.3.1.3 The upper-sole peeling strength shall be not less than 40 N/cm or the sidewall-upper peeling strength shall be not less than 60 N/cm. In case that the material is torn and the adhesive film is still bonding during the peeling test, the peeling strength shall be not less than 20 N/cm.

5.3.2 Flexing resistance of whole shoes

5.3.2.1 The test need not to be carried out in any of the following cases:

- a) The shoe sizes is less than 230;
- b) The sole thickness at flexing area (including patterns) is more than 25 mm.

Note: The sole thickness at flexing area includes the insock thickness, but does not include the thickness of bottom wall (sidewall) which is higher than insock.

- 5.3.2.2 The flexing resistance shall be in accordance with Table 2.

Table 2 Flexing resistance

Item	Requirements
Flexing resistance	After flexing, upper: no crack grain, no delaminating, no damage; the debonding length at sidewall or upper-sole or sole shall be ≤ 5.0 mm; no more than 3 new cracks and individual crack length shall be ≤ 5.0 mm; no paint peel-off on sole; no air (liquid) cushion leakage or shrunken.

5.3.3 Outsole abrasion resistance

- 5.3.3.1 The test is not applicable to infants' athletic shoes.
- 5.3.3.2 The abrasion mark length shall not be more than 14.0 mm.

5.3.4 Low-temperature flexing resistance of upper materials

- 5.3.4.1 The test is not applicable to infants' athletic shoes.
- 5.3.4.2 Footwear claimed to be used at low temperatures (e.g. winter footwear or thermal footwear), the low-temperature flexing resistance of upper materials shall meet the requirements of QB/T 2224.

5.3.5 Color fastness to rubbing of lining and insock

The color staining shall be not less than Grade 2-3. The gray scale comply with the GB/T 251.

5.3.6 Outsole hardness

- 5.3.6.1 The test is not applicable to infants' athletic shoes.

5.3.6.2 The hardness of solid sole shall be not less than 40 Shore A. The hardness of microcellular sole shall be not less than 40 Shore C.

5.3.7 Outsole and midsole adhesion strength

5.3.7.1 The test is not applicable to infants' athletic shoes.

5.3.7.2 The outsole and midsole adhesion strength shall be not less than 18 N/cm. If the microcellular material is torn and the outsole and midsole is still bonding, the adhesion strength shall be not less than 13 N/cm.

5.3.8 Velcro fatigue resistance

The velcro fatigue resistance shall be in accordance with Table 3.

Table 3 Velcro fatigue resistance

Items		Requirements
Velcro shear strength/kPa	Before repeated opening and closing \geq	70
	After repeated opening and closing \geq	60 (After opening and closing for 3000 cycles)
Velcro peel strength/ (N/mm)	Before repeated opening and closing \geq	0.08
	After repeated opening and closing \geq	0.06 (After opening and closing for 3000 cycles)

6 After-sale quality judgment

See Annex A.

7 Test methods

7.1 Appearance quality

Carry out test according to GB/T 3903.5.

7.2 Upper-sole peeling strength or sidewall-upper peeling strength

Carry out test according to GB/T 3903.3, and the width of knife edge is (10 ± 0.2) mm. It is required to test on toe part or heel part of shoe. If toe part or heel part are unable to be peeled off, the shoe sides should be instead. If both cannot be tested, this test is exempted.

7.3 Flexing resistance of whole footwear

Carry out test according to GB/T 3903.1, continuously flex 40 000 cycles without pre-cut.

7.4 Outsole abrasion resistance

Carry out test according to GB/T 3903.2, and continuously test for 20 min. When testing the abrasion resistance of microcellular outsole, the surface dense layer is not buffed. If the flat part of sole does not meet the test requirements, this test is exempted.

7.5 Low-temperature flexing resistance of upper materials

Carry out test according to QB/T 2224. If specimen cannot be taken from finished footwear, take the same batch of materials for the test.

7.6 Color fastness to rubbing of lining and insock

7.6.1 Take the lining and insock material as specimen. If there is no lining, the contact part between upper and foot shall be regarded as lining. If specimen cannot be taken from finished footwear, take the same batch of materials for the test.

7.6.2 Carry out 50 cycles of wet rubbing according to the method A of QB/T 2882—2007, and then assess the staining grade according to the gray scale of GB/T 251.

7.7 Outsole hardness

Carry out test according to GB/T 3903.4. When testing the hardness of microcellular outsole, the surface dense layer is not buffed. For the outsole is a single material, then test at any part of the forefoot or heel. For the combined sole, then test at force loading part and test the whole shoe together with the composite pieces, and the different materials of the force loading part shall be tested and the results shall be expressed separately.

7.8 Outsole and midsole adhesion strength

Carry out test according to GB/T 21396. The minimum value is taken as the test result.

7.9 Velcro fatigue resistance

7.9.1 Carry out test according to GB/T 3903.20, take the same batch of materials to test the peel strength before and after repeated opening and closing.

7.9.2 Carry out test according to GB/T 3903.21, take the same batch of materials to test the shear strength before and after repeated opening and closing.

8 Judgment

8.1 When the labelling, physical and mechanical performances and major items of appearance quality meet the requirements of this document, no more than two minor items of appearance quality fail to meet the requirement of this document, the product is judged as qualified product.

8.2 In any of the following cases, the product is judged as unqualified:

- a) The labelling does not meet the requirement of this document;
- b) The physical and mechanical performances do not meet the requirements of this document;
- c) One or more major items of appearance quality do not meet the requirements of this document;
- d) More than two minor items of appearance quality do not meet the requirements of this document.

9 Inspection rules, marking, packaging, transportation, storage

Comply with the QB/T 1187.

Annex A
(informative)

After-sale quality judgment for children' s athletic shoes

A.1 After-sale service period

It can be determined by the enterprise according to the product grade, and explicitly declared in the after-sale service specification.

A.2 After-sale quality judgment

The followings may be judged as quality problems in case of normal use within after-sale service period:

- a) Failure to meet the quality requirements for qualified products specified in this standard.
- b) Nail head or tail protruded out of the insole, or uneven insole which affect the use of shoes.
- c) Cracked upper, broken and cracked lasting margin, serious spew, discoloration. Obviously loose grain of genuine leather upper, and peeling off or crack of coating layer.
- d) Broken stitching, adhesion failure.
- e) Counter or toe puff is out of shape or deformed.
- f) Apparent discoloration of lining or insock that pollutes(stained) socks, and frazzled lining.
- g) Cracked, broken or uneven outsole or insole which affect the use of shoes.
- h) Foxing is unbonded or broken.
- i) Air (liquid) cushion leakage or shrunken.
- j) Other defects that affect the use of shoes.

A.3 Test methods

A.3.1 Appearance quality: carry out test according to GB/T 3903.5.

A.3.2 Discoloration: take the white absorbent cotton or gauze which thoroughly absorb water (without dripping water pressed by finger), press it lightly by hand and to-and-fro rub for 10

cycles within 10 cm length at inside of upper (lining) or insocks, then inspect the absorbent cotton or gauze. If there is obvious pollution, it is judged as unqualified.

A.4 Disposal methods

It can be handled according to the after-sale service specification formulated by the enterprise or the unified specifications of the place where the retailer is located.

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