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Children's leather sandals

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(English Translation)

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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 4546—2013 *Children's leather sandals*. In addition to a number of structural and editorial changes, the main technical differences between this document and the QB/T 4546—2013 are:

a) Modify the "scope" (see Clause 1, Clause 1 of edition 2013);

b) Modify the "normative references" (see Clause 2, Clause 2 of edition 2013);

c) Modify the definitions of "infants' leather sandals" and "children's leather sandals" (see 3.1、3.2, 3.1、3.2 of edition 2013);

d) Modify the "general requirements" (see 5.1, 5.1 of edition 2013);

e) Modify the requirements for "appearance quality" (see table 1, table 1 of edition 2013);

f) Delete the requirements and test methods for "odor" and "total thickness of upper strap" (see 5.3、5.4、6.2、6.3 of edition 2013);

g) Modify the requirements for "flexing resistance" and "upper-sole peeling strength" (see 5.3.1、5.3.3, 5.5.1、5.5.3 of edition 2013);

h) Modify the requirements and test methods for "abrasion resistance" and "outsole hardness" (see 5.3.2、5.3.4、6.3、6.5, 5.5.2、5.5.4、6.6、6.8 of edition 2013);

i) Modify the requirements for "upper strap pull-out strength (or upper strap pull-out force)" (see 5.3.5, 5.5.5 of edition 2013), modify the test methods for "upper strap pull-out force" (see 6.7, 6.10 of edition 2013);

j) Modify the requirements for "shanks" (see 5.3.8, 5.7.4 of edition 2013);

k) Add the requirements and test methods for "yellowing resistance" (see 5.3.9、 6.11);

l) Add the requirements and test methods for "outsole and midsole adhesion strength" (see 5.3.10、 6.12);

m) Delete the requirements for “limited substances”、“physical safety performance” (see 5.6、5.7 of edition 2013) and test methods (see 6.13、6.14、6.15、6.16、6.17.1、6.17.2 of edition 2013);

n) Delete the “inspection classification”、“factory inspection”、“type inspection”、“inspection items” (see 7.1、7.2、7.3、7.4 of edition 2013);

o) Modify the “judgment rules” (see Clause 7, 7.5 of edition 2013);

p) Modify the requirements for “packaging、transportation、storage” (see Clause 8, Clause 8 of edition 2013);

q) Delete the “some examples of accessory classification” and “tensile strength test for small parts” (see Annex A and Annex B of edition 2013);

r) Add the “after-sale quality judgment for children’s leather sandals” (see Annex A).

This document was proposed by China National Light Industry Council.

This document was prepared by SAC/TC 305/SC 1 National Technical Committee 305 on Footwear of Standardization Administration of China, Subcommittee Leather Shoes.

The previous editions of this document are as follows:

—The first edition was issued in 2013 as QB/T 4546—2013.

—This is the first revised edition.

Children’s leather sandals

1 Scope

This document specifies the requirements, judgment rules, inspection rules, marking, packaging, transportation and storage of children’s leather sandals, 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 infants’ leather sandals and children’s leather sandals for general use, and these leather sandal straps (upper) are mainly made of genuine leather, imitation leather and textiles, and made through various processes.

This document is not applicable to the infants’ sandals and children’s sandals with special functions.

The infants’ sandals and children’s sandals with the upper strap (upper) made of other materials can refer to this document.

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 2703 *Footwear—Vocabulary*

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

GB/T 3903.2—2017 *Footwear—Test methods for whole shoe—Abrasion resistance*

GB/T 3903.3—2011 *Footwear—General test methods—Peeling strength*

GB/T 3903.4—2017 *Footwear—Test methods for whole shoe—Hardness*

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

GB/T 4841.3 Colour cards of standard depths for dyeing with dyestuffs 2/1、1/3、1/6、1/12、1/25

GB/T 20991—2007 *Personal protective equipment—Test methods for footwear*

GB/T 21396—2008 *Footwear—Test methods for whole shoe—Upper sole adhesion*

GB/T 28011 *Shanks for footwear*

GB/T 38011 *Footwear — Test methods for whole shoe — Pull-out force of upper bands*

HG/T 3689—2014 *Test method of discoloration for footwear*

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

QB/T 1472 *Flexing index of fiberous board for footwear*

QB/T 2673 *Footwear—Specification of marking*

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

QB/T 4862 *Midsoles for footwear*

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' leather sandals
the leather sandals used for infants (3 years old and below) with the shoe sizes not greater than 170

3.2

children's leather sandals
the leather sandals used for children (above 3 years old to 14 years) with the shoe sizes greater than 170

3.3

closed sandals
the upper basically completed, without large area of hollowed out, mainly composed of hollowed out and narrow leather strap knitted materials, which can meet the requirements for coolness and breathability

3.4

open sandals
one or two parts open in the toe part, inner/outer waist part, and back part, making the upper a large opening
Note: There are many open styles, such as open toe style, open back style, open middle style,

close toe and open back style, close toe and close back and open middle style, and so on.

3.5

stripe sandals
the upper composed of various width strips through machine sewing or knitting

Note: Compared with the open styles, the stripe sandals are more open, and according to the position of the loop belt, these sandals can be classified into front loop belt style, back loop belt style and so on.

4 Product classifications

4.1 According to the upper materials, the infants' and children's leather sandals can be classified into genuine leather (grain leather, split leather), imitation leather, textile, mixture of various materials.
4.2 According to the upper structure, the infants' and children's leather sandals can be classified into closed sandals, open sandals, stripe sandals.
4.3 According to the end users, the product can be classified into infants' leather sandals and children's leather sandals.

5 Requirements

5.1 General requirements

5.1.1 The product labelling shall meet the requirements of QB/T 2673.

5.1.2 The after-sale quality judgment refers to Annex A.

5.2 Appearance quality

The appearance quality shall be in accordance with Table 1, where item 1 to 5 are major items, item 6 to 9 are minor items.

Table 1 Appearance quality

No.	Items	Requirements
1	Overall appearance	Free wrinkle, stable, clean and symmetrical (except for special design). The nail head and nail end shall not protrude out of the insole.
2	Upper (strap)	The upper (strap) made of leather, imitation leather: No obvious difference in color and pattern (except for special design). No crazing, crack grain (except for special upper materials like crack leather etc.). No lasting margin exposed and spew. No damage. Slight loose grain at the subsidiary part is acceptable.

Table 1 (Continued)

No.	Items	Requirements
2	Upper (strap)	The upper (strap) made of textile: Defects no more than 2 parts and each area less than 10 mm^2 on the subsidiary part. No lasting margin exposed and no damage. The eyelets shall be punched thoroughly. One eyelet without punched thoroughly is acceptable. The eyelets are smooth.
3	Counter and toepuff	For leather sandals with counter and toepuff, the counter and toepuff shall be upright, smooth, symmetrical, but shall not be shrinkage deformation.
4	Heel	Assembled firmly, upright and symmetrical. The height difference of heel for the same pair of shoes shall be≤1.0 mm.
5	Adhesion	No glue shortage. No adhesion failure.
6	Folding topline	Basically regular, uniform, and smooth. No cut exposed, No crack.
7	Accessories	Assembled firmly and basically symmetrical. No obvious defects.
8	Upper stitching	The line shall be straight, the density shall be even. No skipped stitching, merged stitching, broken stitching, exposed ground stitching, split stitching on primary parts. One skipped stitching and merged stitching at subsidiary parts for each shoe are allowed (except for back stitching in the technology design).
9	Outsole thickness [a]	The outsole thickness at the forepart loading area which contact with ground except the pattern shall be: Children's leather sandals≥3.0 mm, infants' leather sandals ≥2.8 mm.
[a] For the shoe with shoe sizes ≤ 150, the outsole thickness at the forepart loading area which contact with ground except the pattern is exempted.		

5.3 Physical and mechanical performance (not applicable to infants' leather sandals)

5.3.1 Flexing resistance

The flexing resistance shall be in accordance with Table 2.

Table 2 Flexing resistance

Outsole materials	Test conditions	Requirements
Non-genuine leather	With pre-cut 5 mm, continuously flex 40 000 cycles	After flexing, the cut length shall be not longer than 20.0 mm; no more than 3 new cracks and individual crack length shall be not longer than 5.0 mm; no upper delaminating, no paint delaminating, no other damage; no debonding between upper and sole/foxing/welt/bottom wall (sidewall); no delaminating on combined sole; no paint peel-off on sole and bottom wall (sidewall).

Genuine leather	Without pre-cut, continuously flex 40 000 cycles	After flexing, no more than 3 new cracks and individual crack length shall be not more than 5.0 mm; no upper delaminating, no paint delaminating, no other damage; no unbonding on upper sole, foxing, welt and bonding position of bottom wall (sidewall); no delaminating on combined sole; no paint peel-off on sole and bottom wall (sidewall).
It's not applicable for this test in any of the following cases: a) the shoe sizes is less than 230; b) the flexible angle is less than 45° under the force of 30 N according to GB/T 20991—2007, 8.4.1 whole shoe rigidity test; c) the thickness of sole at flexing area is more than 25 mm. The thickness of sole at flexing area includes the thickness of insocks, excluding the thickness of sidewall which is higher than insocks.		

5.3.2 Abrasion resistance

5.3.2.1 The abrasion mark length shall be not more than 15.0 mm.

5.3.2.2 After abrasion, without worn through the outsole.

5.3.2.3 The test is not applicable to the leather outsole.

5.3.3 Upper-sole peeling strength

5.3.3.1 The test is not applicable to the children's leather sandals with sewn construction, cemented-sewn construction, nor special construction (including rivet nailing etc.). This test is applicable to the children's leather sandals with other construction.

5.3.3.2 Test upper strap pull-out strength (or upper strap pull-out force) instead of peeling strength, in any of the following cases:

a) Open (open toe style) and stripe children's leather sandals;

b) The thickness of sole at testing area is more than 25 mm;

c) The hardness of outsole is less than 50 Shore A or the knife slips due to special reasons such as the sole is too soft, too thin and so on.

d) Other cases are not applicable to test upper-sole peeling strength.

5.3.3.3 The upper-sole peeling strength shall be not less than 40 N/cm.

5.3.3.4 In case that the material is torn and the upper and sole is still bonding during the peeling test, the peeling strength shall be not less than 30 N/cm.

5.3.4 Outsole hardness

5.3.4.1 The hardness of solid outsole shall be (45～65) Shore A. The hardness of microcellular outsole shall be (45～ 65) Shore C. The combined sole shall meet the hardness requirements of solid outsole and /or microcellular outsole according to the type of materials.

5.3.4.2 The hardness test is not applicable to the genuine leather outsole or the outsole with thickness less than 3 mm.

5.3.5 Upper strap pull-out strength (or upper strap pull-out force)

The upper strap pull-out strength of the children's leather sandals with cemented construction shall be not less than 70 N/cm. In case that the material is torn and the adhesive film is still bonding, the upper strap pull-out strength shall be not less than 30 N/cm. The upper strap pull-out force of the children's leather sandals with non-cemented construction (rivet nailing etc.) shall be not less than 70 N.

5.3.6 Flexing index of fiberboard

The flexing index of fiberboard shall be not less than 1.9.

5.3.7 Color fastness to rubbing of linings and insocks

The color staining shall be not less than Grade 3 (grey scale).

5.3.8 Shanks

5.3.8.1 Shanks or other rigid supporting materials shall be installed for the children's leather sandals with shoe sizes greater than 200 and heel height more than 20 mm and heel breast height more than 8 mm. The length, longitudinal stiffness, hardness and bending performance of shanks shall meet the requirements of GB/T 28011.

5.3.8.2 The shank test is not applicable to the children's leather sandals with injection-molding midsole. The longitudinal stiffness of injection-molding midsole shall meet the requirements of QB/T 4862.

5.3.8.3 The shank test is not applicable to the shoes with wedge sole, wooden or hard plastic molded sole （hardness≥80 Shore A）.

5.3.9 Yellowing resistance

The yellowing resistance of the upper and sole edge (non-contact ground position) for children's leather sandals shall be not less than Grade 3. This test is applicable for the upper and sole edge (non-contact ground position) with white or light color, except for other color.

5.3.10 Outsole and midsole adhesion strength

The outsole and midsole adhesion strength shall be not less than 20 N/cm. If the microcellular sole is torn and the outsole and midsole is still bonding, the adhesion strength shall be not less than 15 N/cm.

6 Test methods

6.1 Appearance quality

Carry out the test according to GB/T 3903.5.

6.2 Flexing resistance

Carry out the test according to GB/T 3903.1.

6.3 Abrasion resistance

Carry out the test according to GB/T 3903.2—2017. Test conditions: apply a pressure of (4.9±0.1) N, continuously test for 20 min. This test is not applicable to the microcellular outsole without sufficient test area on its surface.

6.4 Upper-sole peeling strength

Carry out the test according to GB/T 3903.3—2011. Test conditions: the width of knife edge is (10±0.2) mm.

6.5 Outsole hardness

Carry out the test according to GB/T 3903.4—2017. When testing the hardness of microcellular outsole, do not polish the surface dense layer of the microcellular outsole. For the outsole made of one material, then test the outsole at any parts which meet requirements of the standard. For the composite sole, then test composite materials together with the whole shoe, and different materials at the loading position shall be tested and expressed results separately.

6.6 Upper strap pull-out strength

6.6.1 Specimen preparation: The sample is one pair of shoes. Cut across the upper strap and sole into the 10 mm-wide test strap, and take one specimen from the inner side and outer side of each shoe respectively. If the upper strap is less than 10 mm in width, keep the sole in the original state. After cutting the upper strap in the middle, clamp one side of the upper strap and sole for testing. Carry out the test at the inner side and outer side of each shoe respectively. The sampling position shall avoid the position where the flexing resistance test has been done.

6.6.2 Test apparatus: tensile testing machine, with accuracy of Class 2, and measurement range of 500 N.

6.6.3 Clamp separation speed: (25±5) mm/min.

6.6.4 Temperature: (23±2) °C.

6.6.5 Clamp the sole (shall not clamp the upper sole bonding area) and the upper strap in the upper jaw and lower jaw separately.

6.6.6 Take the maximum force while separating the upper and sole as pull-out force.

6.6.7 Upper strap pull-out strength is calculated according to Formula (1):

$$\sigma = \frac{F}{B} \quad \text{.....(1)}$$

where,

σ — the upper strap pull-out strength, in Newton per centimeter (N/cm);

F — the maximum pull-out force, in Newton (N);

B — the width of the upper strap, in centimeter (cm).

6.6.8 Take the minimum value of pull-out strength of two straps as the test result for each shoe, to the nearest 1 N/cm. The test result is expressed respectively for each shoe.

6.7 Upper strap pull-out force

Carry out the test according to GB/T 38011, one pair of shoes is required.

6.8 Flexing index of fiberboard

According to QB/T 1472, take the same fiberboard materials to test.

6.9 Color fastness to rubbing of linings and insocks

Carry out 50 cycles rubbing test with perspiration solution according to method A of QB/T 2882—2007. In case of no linings, take the foot-contact inside surface of upper as linings for the test. When linings and insocks cannot be sampled, take the same batch of materials for the test.

6.10 Shanks

Carry out the test according to GB/T 28011. Take 2 shanks for testing the length, longitudinal stiffness and hardness, then choose the hardest one to test the bending performance. Test the longitudinal stiffness of injection-molding midsoles according to QB/T 4862.

6.11 Yellowing resistance

6.11.1 Determination for light colored materials: according to GB/T 4841.3, the light color is not deeper than standard depths for dyeing with dyestuffs 1/12.

6.11.2 Carry out the test according to method A of HG/T 3689—2014, the exposure time is 6 h. When the amount or size of test pieces is insufficient, take the same batch of materials for the test.

6.12 Outsole and midsole adhesion strength

6.12.1 Cut samples and carry out the test according to GB/T 21396—2008. One pair of shoes is required, and take one specimen from each sole. Take the minimum value of two shoes as the final result.

6.12.2 If the sole is rigid material and difficult to cut, use a cutting knife to cut the outer-layer soft material by 50 mm×15 mm without cutting the rigid material, and then carry out the test according to GB/T 21396—2008.

7 Judgment rules

7.1 When the labelling, physical and mechanical performances and major items of appearance quality meet 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.

7.2 In case of 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 the appearance quality do not meet the requirements of this document;

d) More than two minor items of the appearance quality do not meet the requirements of this document.

8 Inspection rules, marking, packaging, transportation, storage

Comply with QB/T 1187.

Annex A
(informative)
After-sale quality judgment for children's leather sandals

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, spew, discoloration and so on. Obviously loose grain in vamp, peeling off or crack of coating layer.

d) Broken stitching, adhesion failure.

e) Counter or toepuff is out of shape or deformed.

f) Heel deformed, cracked, broken or fall off. Top piece fall off.

g) Apparent discoloration of lining or insocks which pollutes (stained) socks. Lining worn out.

h) Cracked, broken or uneven outsole or insole which affect the use of shoes.

i) Foxing is unbonded or broken.

j) Shank is soft, broken or loosen.

k) Other problems that seriously affect the esthetic appearance or the use of shoes.

A.3 Test methods

A.3.1 Appearance quality: carry out the test according to GB/T 3903.5—2011.

A.3.2 Discoloration: take the white absorbent cotton or gauze which thoroughly absorb clean water (without dripping water pressed by finger), press it lightly by hand and to-and-fro rub for 10 cycles within 10 cm length (less than 10 cm, subject to the actual length of the part) at discolored position (inside of uppers, linings or insocks) reported by customers feedback or other positions with the same material as the discolored position, then inspect the absorbent cotton or gauze, there shall not be obvious stain.

A.4 Disposal methods

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