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

GB/T 28011-2021

Replacing GB/T 28011-2011

Shanks for footwear

鞋类勾心

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part

1.Rules for the structure and drafting of standardizing documents". This Standard replaces GB/T 28011-2011 "Shanks for footwear". Compared with GB/T 28011-2011, the main technical changes in this Standard are as follows: - modified the standard's name; - modified the "Scope" (see Chapter 1 of this Edition, Chapter 1 of Edition 2011); - added the definitions for "type I shank", "type L shank" and "type Y shank" (see 3.1, 3.2,

3.3 of this Edition); - modified the product classification (see Chapter 4 of this Edition, Chapter 4 of Edition 2011); - modified the requirements for "marks" (see

5.1 of this Edition,

5.1 of Edition 2011); - modified the requirements for "sensory quality" (see

5.2 of this Edition,

5.2 of Edition 2011); - modified the requirements for "longitudinal stiffness" (see

5.4 of this Edition,

5.4 of Edition 2011); - modified the requirements for "fatigue resistance" (see

5.5 of this Edition,

5.5 of Edition 2011); - modified the requirements for "hardness" (see

5.6 of this Edition,

5.6 of Edition 2011); - modified the requirements for "bending performance" (see

5.7 of this Edition,

1 Scope

China's national standard for footwear shanks. It specifies the terms and definitions, the product classification, the technical requirements, the number of specimens, the test methods, the inspection rules and the marking, packaging, transport and storage of the shank fitted between the insole and the outsole of a shoe. A shank is a strip of steel or composite, a few centimetres long, buried in the waist of a shoe where nobody ever sees it, and it is the component that decides whether the shoe holds its shape. In a heeled shoe the foot is supported at the ball and at the heel with nothing underneath in between, and the shoe is bridging that gap: without a shank the waist collapses, the heel breaks forward, and the shoe is destroyed in weeks. The taller the heel, the higher the bending moment and the more the shank matters. So the requirements are mechanical and specific: the longitudinal stiffness, which is what resists the bending; the fatigue resistance, tested by repeated flexing because the load is applied at every step and a shank that is strong once but fails at fifty thousand cycles is useless; the hardness; and the bending performance. The 2021 edition changes the standard's name and scope, adds definitions for the I, L and Y shank types with a figure showing how each is measured, revises the classification, and revises the requirements for sensory quality, longitudinal stiffness, fatigue resistance, hardness and bending performance. The addition of the type definitions and the measurement figure is the practical change: the three shapes are measured differently, and a length specified without saying which type it is could be read two ways. Issued on 20 August 2021 and in force since 1 March 2022, it replaces GB/T 28011-2011.

This Standard specifies product classification, technical requirements, test methods, inspection rules and marks, packaging, transportation, and storage for shanks for shoes (including boots). This Standard is applicable to shanks for shoes of size 200 and above (including boots). This Standard is applicable to wooden shanks or similar products.

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 191, Packaging and storage marks

GB/T 230.1, Metallic materials - Rockwell hardness test - Part

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 2703 as well as the followings apply.

3.1 type L shank A shank shaped like the letter L.

3.2 type Y shank A shank shaped like the letter Y.

3.3 type I shank A shank shaped like the letter I.

4 Product classification

The shanks can be classified according to the following conditions.

5.1 Marks

5.1.1 The shank shall be marked with the effective heel height or the applicable effective heel height range, expressed in Arabic numerals, and the unit is millimeters.

5.2 Sensory quality The surface of the shank has no burrs, corrosion, cracks, bending deformation, smooth and flat. The positions of ribs, nail holes and forks are correct.

5.3 Size

5.3.1 Size tolerance The length tolerance is the difference between the maximum value and the minimum value in the measured value of the specimen.

5.3.2 Length

5.3.2.1 Length requirements for type I shanks of men's shoes See Table 1 for the length requirements for type I shanks of men's shoes.

5.3.2.3 Length requirements for type L shank The length of the type L shank shall be the length of the type I shank for women's shoes and children's shoes corresponding to different heel heights in Table 2, minus 15mm.

5.4 Longitudinal stiffness The longitudinal stiffness requirements for the shank are shown in

Table 3.

5.5 Fatigue resistance After the metal shank is tested for fatigue resistance according to the number of tests specified in Table 4, the specimen shall not be broken.

5.6 Hardness The shank hardness requirements are shown in Table 5.

6 Number of specimens

Take the shanks of the same material, the same specification, and a continuous production batch as a sampling batch. Randomly select 6 shanks as specimens, of which 2 shanks are used for the inspection of mark, sensory quality, size, longitudinal rigidity and hardness.

7 Test methods

7.1 Marks and sensory quality Inspect visually under normal light.

7.2 Shank length

7.3 Shank width Use vernier calipers with an accuracy of not less than 0.05mm. Measure a point on the head and tail of the shank without burrs respectively. The result is to one decimal place. The width values of the head and tail of each shank are expressed separately.

7.4 Shank thickness Use vernier calipers with an accuracy of not less than 0.05mm. Measure a point on the head and tail of the shank without burrs respectively. The arithmetic mean of the thickness of the head and tail is the thickness of the shank. The result is to one decimal place. The thickness value of each shank is indicated separately.

7.5 Longitudinal stiffness Test according to GB/T 3903.34. The test results of each shank are shown separately.

7.6 Fatigue resistance Test according to GB/T 3903.35. The test results of each shank are shown separately.

8.1 Inspection of shank products

8.1.1 Batching Products are inspected and accepted in batches. Continuously produced products of the same model and specification can be used as an inspection lot.

8.1.4 Type inspection

8.1.4.1 In one of the following situations, type inspection shall also be carried out. tested for other items.

8.3 Result judgment