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**General Technical Requirements for Children's
Toothbrushes**

儿童牙刷通用技术要求

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General Technical Requirements for Children's Toothbrushes

1 Scope

This Document specifies the sensory quality, specifications and dimensions, and the like technical requirements, as well as the inspection rules, marking, packaging, transportation and storage of children's toothbrushes (hereinafter referred to as "toothbrushes"); provides classifications benefiting the technical provisions; and describes the corresponding test methods.

This Document applies to the production, inspection and sale of toothbrushes for children aged 14 and below.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 191 Packaging – Pictorial Marking for Handling of Goods

GB/T 2828.1 Sampling procedures for inspection by attribute - Part1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 2829 Sampling procedures and tables for periodic inspection by attributes (Apply to inspection of process stability)

GB/T 4208-2017 Degrees of protection provided by enclosure (IP code)

GB/T 19342-2024 Manual toothbrushes - General requirements and test methods

GB 39669 General technical requirements for safety of toothbrushes and oral implements

GB/T 40362-2021 Powered toothbrushes - General requirements and test methods

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB 39669, GB/T 19342-2024, and GB/T 40362-2021 apply.

4 Classification

4.1 According to the driving mode, they can be divided into manual toothbrushes and electric toothbrushes.

4.2 According to the shape of the brush head, they can be divided into toothbrushes with conventional brush head, toothbrushes with cylindrical brush head, and toothbrushes with U-shaped brush head, etc., see Appendix A for examples.

5 Requirements

5.1 Sensory quality

The sensory quality shall meet the requirements of 4.1 in GB/T 19342-2024.

5.2 Specifications and dimensions

5.2.1 The specifications and dimensions of toothbrushes with conventional brush head shall meet the requirements of Table 1; and the dimension diagram is shown in Figure 1.

5.2.2 The specification and dimension of toothbrush with cylindrical brush head shall meet the requirements of Table 2. See Figure 1 for the dimension diagram.

It shall meet the requirements of 5.3.3 in GB/T 40362-2021.

5.11 Service life of electric toothbrush switch

It shall meet the requirements of 5.4 in GB/T 40362-2021.

5.12 Waterproof performance of electric toothbrush

Electric toothbrush with non-replaceable battery shall be able to work normally after test in 6.13.

5.13 Dropping performance of electric toothbrush

It shall work normally after test in 6.14; and the firmness and waterproof performance of detachable brush head shall meet the requirements of 5.10 and 5.12.

5.14 Noise of electric toothbrush

It shall meet the requirements of 5.5 in GB/T 40362-2021.

6 Test Methods

6.1 Specimen conditioning and test environment

The sample conditioning shall be conducted in an environment with a temperature of $(23\pm 2)^{\circ}\text{C}$ and a relative humidity of $(50\pm 10)\%$ for no less than 4 h; and the test shall be carried out under such environmental conditions (unless otherwise specified).

6.2 Sensory quality

6.2.1 Visually inspect the sample at a distance of 300 mm from the sample under natural light or a light source with a color temperature of 6500 K.

6.2.2 Use an absorbent cotton fully soaked in 65% ethanol to apply a force of 1 N~1.5 N to wipe the brush head, brush handle, bristles and trims back and forth 100 times, at a wiping frequency of 2 times/s~3 times/s; and visually observe whether there is color on the absorbent cotton.

6.2.3 Check the bubbles in the brush handle by comparing with the dust standard chart.

6.2.4 Use the sense of smell to judge whether there is obvious odor.

6.3 Specifications and dimensions

The length of hair side, width of hair side, thickness of brush head, bristle height, and total length of the toothbrush are measured by a measuring tool with a minimum graduation value of no more than 0.02 mm; and the single filament diameter is measured at the root by a

measuring tool with a minimum graduation value of no more than 0.001 mm.

6.4 Hair tuft strength

The hair tuft strength is assessed by the hair tuft bending force and is tested according to the method in Annex A of GB/T 19342-2024.

6.5 Sharpening rate

It shall be tested according to the method in 5.5 of GB/T 19342-2024.

6.6 Breaking strength of molded bristles

It shall be tested according to method 5.6 of GB/T 19342-2024.

6.7 Bending recovery rate of single filament

Manual toothbrushes are tested according to method in 5.7 of GB/T 19342-2024; and electric toothbrushes are tested according to method in 6.4.2 of GB/T 40362-2021.

6.8 Temperature resistance

6.8.1 Test device: Constant temperature water tank with temperature control accuracy of ± 2 °C.

6.8.2 Test steps: For manual toothbrushes, immerse the specimen in water at (50 ± 2) °C for 20 min; take it out and then check the handle, brush head and bristles for any abnormality. For electric toothbrushes, remove the brush head and immerse it in water at (50 ± 2) °C for 20 min; take it out and then check the brush head and bristles for any abnormality.

6.9 Bending resistance of handle

6.9.1 Test device: Tensile testing machine with a minimum graduation value of 0.1 N, equipped with a reverser and a clamp. Sample support, the distance between the two support points is 50 mm, see Figure 2. The top pressure rod, the top is a hemispherical shape with a radius of 6 mm.

6.9.2 Test steps: Mark the test section on the specimen; the length of the test section is 50 mm; and the starting point is 40 mm from the top of the brush head. Place the specimen on the sample support (with the bristles facing downward); the two ends of the test section are respectively aligned with two support points of the base; and the top pressure rod acts vertically on the center of the test section; the specific position is shown in Figure 2. Start the tensile testing machine, and let the top pressure rod drop 25 mm at a uniform speed of (50 ± 10) mm/min. During the descent of the top pressure rod, record the tensile machine reading when the specimen breaks as the bending force of handle. If the specimen does not break during the descent of the top pressure rod and the tensile machine reading has reached 60 N, the test shall be stopped and the recorded result shall be "the bending force of the handle is no less than 60 N". If the specimen still does not break when the top pressure rod is lowered to 25 mm, the test shall be stopped and the recorded result shall be "no break within the deformation limit".

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