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

GB/T 30002-2024

Replacing GB 30002-2013, GB 30003-2013

General technical requirements for children's toothbrushes

儿童牙刷通用技术要求

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1 Scope

This document specifies technical requirements for children's toothbrushes, referred to below as toothbrushes, covering sensory quality and dimensions, together with the inspection rules, marking, packaging, transport and storage; it gives a classification for convenience of technical specification and describes the corresponding test methods.

This document applies to the manufacture, inspection and sale of toothbrushes for use by children of 14 years of age and under.

4 Classification

4.1 By means of drive, toothbrushes are divided into manual toothbrushes and powered toothbrushes.

4.2 By the shape of the head, toothbrushes are divided into conventional head toothbrushes, cylindrical head toothbrushes, U-shaped head toothbrushes and others; examples are given in Annex A.

5 Requirements

5.1 Sensory quality shall meet the requirements of 4.1 of GB/T 19342-2024.

5.2.1 The dimensions of a conventional head toothbrush shall meet the requirements of Table 1, the dimensions being illustrated in Figure 1. Table 1 gives, in millimetres, for the manual and the powered toothbrush respectively: tufted area length, not more than 29.0 and not more than 29.0; tufted area width, not more than 13.0 and not more than 18.0; head thickness, not more than 6.0 and not more than 18.0; filament height, 5.0 to 12.0 and

5.0 to 12.0; monofilament diameter, not more than 0.18 and not more than 0.18; and overall length of the toothbrush, 100.0 to 180.0 for the manual toothbrush, with no figure for the powered toothbrush. Footnote a states that only conventional filaments are assessed and injected-rubber filaments are not; footnote b states that a folding, telescopic or assembled handle is to be extended before measurement.

5.2.2 The dimensions of a cylindrical head toothbrush shall meet the requirements of Table 2, the dimensions being illustrated in Figure 1. Table 2 gives, in millimetres, for the manual and the powered toothbrush respectively: tufted area length, not more than 29.0 and not more than 29.0; maximum head diameter, not more than 18.0 and not more than 30.0; filament height, 2.5 to 6.0 and 2.5 to 6.0; monofilament diameter, not more than 0.18 and not more than 0.18; and overall length, 100.0 to 180.0 for the manual toothbrush, with no figure for the powered toothbrush. The same two footnotes apply.

5.3 Tuft strength. A conventional head tufted toothbrush shall declare its tuft strength class, either soft or extra soft. After the test of 6.4 the tuft bending force shall meet the corresponding requirement of Table 3, which gives a tuft bending force F below 6 N for soft and below 4 N for extra soft. A note states that where the product contains an injected-rubber structure, that part is removed before testing.

5.4 The end-rounding rate shall be not less than 90 %.

5.5 The breaking force of injected-rubber filaments shall be not less than 7 N. Note: injected-rubber filaments of 3 mm or less in length are not assessed.

5.6 The monofilament bending recovery rate shall be not less than 60 %. Note: only conventional filaments are assessed; injected-rubber filaments are not.

5.7 Temperature resistance. After the test of 6.8 there shall be no abnormality.

5.8 Handle bending resistance. Apart from handles of special design, such as telescopic, folding or assembled handles, the handle of a manual toothbrush shall, after the test of 6.9, show a bending resistance of not less than 60 N, or shall not break within the deformation limit.

5.9 The fatigue resistance of the handle shall meet the requirements of 4.9 of GB/T 19342-2024.

5.10 The retention of a detachable head on a powered toothbrush shall meet the requirements of 5.3.3 of GB/T 40362-2021.

5.11 The service life of the switch of a powered toothbrush shall meet the requirements of 5.4 of GB/T 40362-2021.

5.12 Water resistance of a powered toothbrush. A powered toothbrush with a non-replaceable battery shall still work normally after the test of 6.13.

5.13 Drop performance of a powered toothbrush. After the test of 6.14 the toothbrush shall

still work normally, and the retention of the detachable head and the water resistance shall meet the requirements of 5.10 and 5.12.

5.14 The noise of a powered toothbrush shall meet the requirements of 5.5 of GB/T 40362-2021.

6 Test methods

6.1 Conditioning and test environment. Samples are conditioned at a temperature of 23 degrees Celsius plus or minus 2 degrees Celsius and a relative humidity of 50 % plus or minus 10 % for not less than 4 h, and, unless otherwise stated, the tests are carried out under those conditions.

6.2 Sensory quality. The sample is examined by eye at a distance of 300 mm in natural light or under a light source of colour temperature 6 500 K. Absorbent cotton thoroughly soaked in 65 % ethanol is rubbed back and forth 100 times over the head, the handle, the filaments and any decorative parts with a force of 1 N to 1.5 N, at a rate of 2 to 3 strokes per second, and the cotton is examined by eye for colour. Bubbles in the handle are checked against the dust standard chart. The presence of any noticeable odour is judged by smell.

6.3 Dimensions. The tufted area length, tufted area width, head thickness, filament height and overall length are measured with an instrument whose smallest scale division is not greater than 0.02 mm; the monofilament diameter is measured at the root with an instrument whose smallest scale division is not greater than 0.001 mm.

6.4 Tuft strength is assessed by the tuft bending force, tested by the method of Annex A of GB/T 19342-2024.

6.5 The end-rounding rate is tested by the method of 5.5 of GB/T 19342-2024.

6.6 The breaking force of injected-rubber filaments is tested by the method of 5.6 of GB/T 19342-2024.

6.7 The monofilament bending recovery rate is tested by the method of 5.7 of GB/T 19342-2024 for manual toothbrushes and by the method of 6.4.2 of GB/T 40362-2021 for powered toothbrushes.

6.8 Temperature resistance. Apparatus: a constant temperature water bath controlling temperature to plus or minus 2 degrees Celsius. Procedure: for a manual toothbrush, the specimen is immersed in water at 50 degrees Celsius plus or minus 2 degrees Celsius for 20 min, then taken out and the handle, head and filaments examined for any abnormality. For a powered toothbrush, the head is removed and immersed in water at 50 degrees Celsius plus or minus 2 degrees Celsius for 20 min, then taken out and the head and filaments examined for any abnormality.

6.9 Handle bending resistance. Apparatus: a tensile testing machine with a smallest scale

division of 0.1 N, fitted with a reverser and clamps; a specimen support with 50 mm between the two support points, as shown in Figure 2; and a pressing rod ending in a hemisphere of 6 mm radius. Procedure: a test section 50 mm long is marked on the specimen, starting 40 mm from the tip of the head. The specimen is placed on the support with the filaments downwards, the two ends of the test section aligned with the two support points, and the pressing rod bears perpendicularly on the centre of the test section, as shown in Figure 2. The testing machine is started and the pressing rod descends at a steady (50 plus or minus 10) mm/min for 25 mm. If the specimen breaks during the descent, the reading of the machine at that moment is recorded as the handle bending resistance. If the specimen has not broken and the reading has reached 60 N, the test may be stopped and the result recorded as a handle bending resistance of not less than 60 N. If the rod has descended 25 mm and the specimen has still not broken, the test is stopped and the result recorded as no break within the deformation limit.

6.10 Fatigue resistance of the handle. The handle is extended, folded or assembled at a rate of (20 plus or minus 2) cycles per minute for 200 consecutive cycles, and then examined by eye.

6.11 The retention of a detachable head on a powered toothbrush is tested by the method of 6.4.3 of GB/T 40362-2021.

6.12 The service life of the switch of a powered toothbrush is tested by the method of 6.5 of GB/T 40362-2021.

6.13 The water resistance of a powered toothbrush is tested by the method of GB/T 4208-2017.

6.14 Drop performance of a powered toothbrush. The assembled product is dropped from a static position at a height of 900 mm onto concrete or a similar hard surface, five times, landing on the hard surface in five different orientations, namely front down, back down, left side down, right side down and base down, as shown in Figure 3. The retention of the detachable head and the water resistance are then tested by the methods of 6.11 and 6.13.

6.15 The noise of a powered toothbrush is tested by the method of 6.6 of GB/T 40362-2021.

7 Inspection rules

7.1 Inspection is divided into delivery inspection and type inspection.

7.2.1 Every product offered for delivery shall undergo delivery inspection. The product may leave the works only after the manufacturer's quality inspection department has found it to comply with this document, and it shall carry a mark showing that it has passed inspection.

7.2.2 Delivery inspection follows GB/T 2828.1, using a normal single sampling plan at special inspection level S-3; the inspection items, the requirements, the test methods and