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Replacing JC/T 764-2001

WC seats

坐便器坐圈和盖

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Foreword

This standard modifies and adopts the American Standard ANSI Z 124.5-1997 “WC plastic seats”.

This standard is a revision of JC/T 764-2001 “WC plastic seats”.

The main differences between this standard and ANSI Z 124.5-1997 are as follows:

- ADD the special performance requirements and test methods for WC seats which are made wood, composite materials, resins, etc.;
- ADD the definitions, technical requirements and test methods for soft close seats;
- ADD the requirements for static load, moisture-resistance and cold-hot fatigue;
- Unrecoverable bending is subject to common requirements.

The main changes of this standard as compared with JC/T 764-2001 are as follows:

- ADD the requirements for dimension and test methods;
- ADD the technical requirements and test methods for soft close WC seats;
- ADD the special performance requirements and test methods for WC seats which are made of wood, composite materials, resins, etc.;
- CANCEL the public and household categories of unrecoverable bending, the technical requirements are the same as the original public category;
- ADD the requirements for static load, moisture-resistance, and cold-hot fatigue.

Appendix A and Appendix B of this standard are normative appendixes.

This standard replaces JC/T 764-2001 from the date of implementation.

Please note that some of the contents of this standard may involve patents. The issuing body of this standard shall not be responsible for identifying these patents.

This standard was proposed by the China Building Materials Federation.

This standard shall be under the jurisdiction of the National Building Sanitary

WC seats

1 Scope

This standard specifies the terms and definitions, classification, requirements, test methods, inspection rules, markings, operation instructions, packaging, transportation and storage of WC seats.

This standard is applicable to the WC seats which are made of plastic, wood, composite materials, resin and other materials, installed on the surface of the pedestal pan, are comfortable, hygienic and beautiful (hereinafter referred to as the WC seats).

2 Normative references

The provisions in following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this standard; however, parties who reach an agreement based on this standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

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

GB/T 4892 Dimensions of rigid rectangular packages - Transport packages

GB/T 6388 Transport packaging - Marking for receipt and delivery

GB/T 6461 Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates - Rating of test specimens and manufactured articles subjected to corrosion tests

GB/T 6739 Paints and varnishes - Determination of film hardness by pencil test

GB/T 9286 Paints and varnishes - Cross cut test for films

GB/T 10125 Corrosion tests in artificial atmospheres - Salt spray tests

3 Terms and definitions

The following terms and definitions apply to this standard.

3.1

Chipped areas

More than two surface damages ≥ 0.4 mm.

3.2

Blister or void

The portion of surface break when using a 13 mm diameter nylon rod to manually apply pressure to 44.5 N.

3.3

Surface porosity

The holes on the surface which do not penetrate the base material.

3.4

Molding irregularity

Any visible defects associated with molding, such as corrugations, dome, missing material, flash or dents. Weld marks and sprues are not considered to be molding irregularity.

3.5

Pit

A small pit of approximately equal width and depth on the surface.

3.6

Pinhole

A small hole on the surface that does not exceed 0.4 mm in diameter.

3.7

Speck

The different color at surface which is generated by the foreign particles, the maximum size of the speck is 0.7 mm. It does not include specks or mixed specks that produce a decorative pattern on the surface.

3.8

Bumper

5.3 Processing and assembly

5.3.1 Lean-back

When the seat and cover are opened, the angle between the horizontal plane is ≥ 95° and it can be kept in the open position.

5.3.2 Warpage

The warpage of the seat or cover with two bumpers is ≤ 3.2 mm. The of warpage of the seat or cover with four bumpers is ≤ 4.8 mm.

5.3.3 Smoothness

The parting line and the edge of the seat and cover are smooth. There is no hanging yarn from the combed cotton yarn which has a Tex count of 8 ~ 10 (English cotton yarn number 70 ~ 56).

5.4 Performance of use

5.4.1 Unrecoverable bending

The unrecoverable bending of the seat and cover is ≤ 1.3 mm. After the test, there shall be no break, crack, or other damage.

5.4.2 Swing test

The load is 1335 N and the cycle is 25000 times. After the swing test, there shall be no damage, the hinge is normal.

5.4.3 Bolt and nut torque

Metal bolts and nuts shall withstand a minimum torque of 3.4 N • m without screw loose or break;

Plastic bolts and nuts shall withstand a minimum torque of 2.0 N • m without screw loose or break.

5.4.4 Impact test

The surface of the plastic seat and cover after the impact test has neither crack nor chipped area.

5.4.5 Open-close test (not applicable to soft close products)

After 50000 open-close tests, the bumper and the hinge are free from cracks, damage or falling off. The seat and cover must not have cracks, breaks, or other damages.

Except for the thermoplastic seat and cover, the other seat and cover shall, after the test, comply with the requirements of 5.1.1, the surface quality shall comply with the requirements of 5.2.

5.5.8 Cold-hot fatigue

After the test, it shall comply with the requirements of 5.1.1 and 5.3.2.

6 Test methods

The following tests of 6.1 and 6.4 ~ 6.13 shall be carried out at an ambient temperature of 22 °C ± 3 °C.

6.1 Measurement method of dimension

The dimensions are measured by a ruler which has a division value of 1 mm and an I-square which has a division value of 1°. After axially pushing the seat and cover to move it along the opposite direction, use the feeler gauge which has a division value of 0.1 mm to measure the axial clearance. Use the vernier caliper which has a division value of 0.02 mm to respectively measure the thickest part of each bumper, take the minimum value.

6.2 Inspection of surface quality

First use standard detergent and water to wash the seat and cover, let it dry naturally or otherwise use a clean, absorbent, lint-free material to wipe it dry. Use a sponge which has dipped the 50% aqueous solution of ink to wipe its surface, then use tap water to rinse the mark of ink and let it dry naturally. The illuminance at the surface of the specimen is 1616 lx ± 540 lx, it is visually inspected at a distance of 300 mm ~ 600 mm. When inspecting the colored seat and cover, it shall use the ink of contrast color.

6.3 Lean-back test

Install the seat and cover on the test platform in the use state, turn the seat and cover to fully open it, measure the angle with the horizontal plane and record it (see Figure 3).

platform and the seat is same as the use state. Use the ruler which has a division value of 0.1 mm to measure the distance X_1 (mm) between the load-application portion and the platform. Place a steel strip which has a width of 50 mm, a thickness of 25 mm, and a length greater than the seat's width onto the seat, the length direction is parallel to the line which connects the centers of the installation bolts. For the seat which has a L < 470 mm or L ≥ 470 mm, the distance between the centerline along the length direction of the steel strip and the line which connects the centers of the installation bolts is respectively 254 mm and 305 mm. Apply the load of 1335 N ± 22 N to the midpoint position of the centerline along the length direction of the steel strip, including the steel bar's self-weight. After 15 min ± 2 min, remove the steel strip; after another 15 min ± 2 min, measure the distance X_2 (mm) between the load-application point and the platform. The bending of the seat = X_1 - X_2 (mm); after finishing the measurement, check it in accordance with 6.2.

6.6.2 Measurement of unrecoverable bending of cover

Install the seat and the cover in set on the test platform, then use the method of 6.6.1 to measure the unrecoverable bending of the cover. After finishing the measurement, check it in accordance with 6.2.

6.7 Swing test

Make inspection in accordance with the provisions of Appendix A.

6.8 Test of bolt and nut's torque

Use metal nuts, bolts, etc. to fix the test bolts and nuts in the holes of the test torque bench, use the torque wrench to determine the torque. The bolt torque test is as shown in Figure 5, the nut torque test is as shown in Figure 6.

6.9 Impact test

Let a steel ball which has a diameter of 38 mm and a mass of 0.225 kg freely fall from a height of 455 mm, onto the center of the cover, the front center of the seat, and the center of the middle of seat, respectively. The impact position is as shown in Figure 7. After the impact is completed, check it in accordance with 6.2.

Place the temperature-regulatable soldering iron which has a surface temperature of 232.2 °C ± 5.6 °C on the surface of the seat or cover, remove it after 2 minutes.

6.15 Test of stain-resistance

Carry out the inspection in accordance with the provisions of Appendix B.

6.16 Test of corrosion-resistance of metal accessory

Perform the acid salt mist test in accordance with the provisions of GB/T 10125.

6.17 Test of coating hardness

Use the method B of GB/T 6739 - manual method to make determination.

6.18 Test of coating adhesion

It is tested in accordance with GB/T 9286, the single-edged blade is 20° ~ 30°, the number of cuts is 6, the spacing of cut is 2 mm, use the manual method for cutting.

6.19 Test of color fastness

Use a white wet cotton cloth to quickly wipe the dry seat or cover for more than 5 s. Check whether the white cloth is stained.

6.20 Test of moisture-resistance

Place the seat and cover in a container of temperature 50 °C ± 3 °C and relative humidity 95% for 200 h, then dry it at ambient temperature of 22 °C ± 3 °C for 24 h, check it in accordance with 5.1.1 and 5.2.

6.21 Test of cold-hot fatigue

Place the seat and cover in a container at the temperature of 70 °C ± 3 °C and a freezer at -20 °C ± 3 °C for 3 h. After 5 cycles, dry it at the ambient temperature of 22 °C ± 3 °C for 24 h, check it in accordance with 5.1.1 and 5.3.2.

7 Inspection rules

7.1 Inspection classification

Product inspection includes exit-factory inspection and type inspection.

7.2 Exit-factory inspection

Exit-factory inspection items include size, surface quality, processing and

Appendix B

(Normative)

Test of stain-resistance

B.1 Scope of application

This method is suitable for testing the stain-resistance of the seat and cover.

B.2 Instruments

Dropper, watch glass, etc.

B.3 Test procedure

ADD respectively 2 drops of the reagents as shown in B4 on different surfaces of the specimen, one set of reagents is not covered, the other set of reagents is covered by a watch glass to prevent evaporation of the reagents. After 16 h, remove the watch glass and reagents; after another 24 h, make evaluation.

B.4 Reagents for the test of stain-resistance

- 20 g of flake soap (neutral) dissolved in 100 mL of water;
- Crude oil;
- Alcohol (95%);
- Ethyl acetate;
- 10% aqueous ammonia solution for household;
- 10% aqueous citric acid solution;
- 6.0% aqueous urea solution;
- 3% aqueous hydrogen peroxide solution;
- A freshly opened concentrated sodium hypochlorite solution (a solution with a weight ratio of 5.25%);
- 0.1% aqueous carbolic acid solution (0.1 g dissolved in 100 mL of water, the Lysol can be used in this test);
- Mineral oil (petroleum);

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