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Drainage fittings for sanitary wares

卫生洁具排水配件

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Drainage fittings for sanitary wares

1 Scope

This standard specifies the terms and definitions, materials, technical requirements, inspection methods, inspection rules, marking, packaging, transportation and storage of drainage fittings for sanitary wares (hereinafter referred to as “waste fitting”).

This standard is applicable to the waste fitting products such as wash basin, washing-tank, bath-tub, bidet, shower room and urinal, which are connected to gravity drainage pipe.

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 197-2003	*General purpose metric screw threads—Tolerances*
GB/T 1176	*Specification for cast copper alloys*
GB/T 1527	*Drawn tube of copper and copper alloys*
GB/T 2828.1	*Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*
GB/T 2829-2002	*Sampling procedures and tables for periodic inspection by attributes (Apply to inspection of process stability)*
GB/T 6461-2002	*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 7307	*Pipe threads with 55 degree thread angle where pressure-tight joints are not made on the threads*
GB/T 10125-1997	*Corrosion tests in artificial atmospheres - Salt spray tests*
GB/T 12670	*Polypropylene (PP) resin*
GB/T 12671	*Polystyrene (PS) resin*
GB/T 12672	Acrylonitrile-butadiene-styrene (ABS) resin

the vertical distance from the top of the bend of the inner wall of the trap and the lowest point of the inner wall of horizontal drainage pipe.

4 Materials

4.1 The materials of casting copper parts shall meet the requirements of GB 1176. It may also be made of other copper materials that guarantee the technical requirements.

4.2 The copper pipe shall meet the requirements of GB/T 1527.

4.3 The plastic materials shall meet the requirements of GB 12670, GB 12671 and GB 12672.

4.4 The rubber materials shall meet the requirements of GB/T 21873 and HG/T 3097.

4.5 The stainless steel materials shall meet the requirements of GB/T 20878.

4.6 In case that other metallic and non-metallic materials are adopted for product accessories, the materials shall meet corresponding standards.

5 Technical requirements

5.1 Requirements for connection dimension

The dimension of connection of waste fitting shall meet the requirements of Annex A.

5.2 Processing and assembling

5.2.1 The exterior surface of metal parts of product shall be free from defects such as sand hole, shrinkage cavity, crack and air hole.

5.2.2 The surface of the plastic parts shall be free from defects such as significant ripple, adhesive mark, significant scratch, modified damage. Plastic trap shall be uniform in color and luster and be free from discoloration decomposition line.

5.2.3 The surface of the thread shall be bright and clean, and free from significant defects such as dent and broken tooth. The connected common thread shall meet Grade 7 tolerance precision requirements of GB/T 197; and the precision of unsealed connection pipe thread shall not be lower than Grade B precision of GB/T 7307.

5.2.4 The operating force of switch of puller waste fitting shall not be greater than 10N; and that of waste fitting with spring start-stop shall not be greater than 25N.

5.2.5 The assembled waste fitting shall be connected firmly and free from looseness; the action shall be flexible and free from jam.

requirements of 5.7.1.

5.8 Bearing performance

For test conducted according to the method in 6.8, the significant surface of waste fitting matching bath-tub and shower room shall be free from crack, and the deformation amount shall not be greater than 3%.

5.9 Service life

After 10 000 cycles of service life test according to the method in 6.9, the product shall be free from significant defect, and convenient for disassembly, and free from the defects that affect the use function; after service life test, test is conducted according to 5.2.4. The change of test result shall not exceed ±20%, and shall meet the requirements of 5.7.1.

5.10 Performance requirements for waste fitting of washing-tank

The washing-tank product shall also meet the requirements of the following terms and conditions, except above requirements.

5.10.1 Water absorption test

It is tested according to the method in 6.10.1, and the weight change of the plastic accessories shall not be greater than 0.50%.

5.10.2 Hot oil test

It is tested according to the method in 6.10.2. the obvious surface of plastic parts shall be free from fracture, crack, bubbling, delaminating and permanent discoloration etc.

5.10.3 Dotty impact

For test conducted according to the method in 6.10.3, the surface of waste fitting shall be free from significant damage.

6 Test methods

6.1 Test on requirements for connection dimension

The test on dimension of connection of waste fitting shall be conducted with Vernier caliper with precision of 0.02 mm or test equipment with equivalent precision.

6.2 Test on processing and assembling test

6.2.1 Inspect the processing quality of metal parts of product visually.

6.2.2 Inspect processing quality and appearance quality of plastic products visually.

6.2.3 Inspect the surface quality of thread visually, and the thread precision shall be tested with thread gauge at required standard level.

6.2.4 Install the waste fitting on test device according to normal use status; operate repeatedly for three times; test the operative force of switching-on and switching-off of waste fitting with force-meter with precision of 0.01 N.

6.2.5 The assembly test of waste fitting shall be conducted by hand-feeling.

6.3 Test on appearance

6.3.1 Inspect the appearance of product visually.

6.3.2 Visual inspection shall be carried out on the polished surface of product under natural scattered light or white light without reflected light. The illuminance is not lower than 300 lx.

6.3.3 Visual inspection shall be carried out on the plated-surface of product under natural scattered light or white light without reflected. The illuminance is not lower than 300 lx.

6.3.4 Acetic acid-salt spray test shall be conducted on plated-surface of waste fitting for 24h according to GB/T 10125-1997. The results are rated according to GB/T 6461-2002.

6.4 Test on requirements for wall thickness of waste fitting pipe

The test on thickness shall be conducted with Vernier caliper with precision of 0.02 mm.

6.5 Test on trap seal

Test on trap seal shall be conducted with water sealing ruler or straight-ruler.

6.6 Test on stability of water sealing

6.6.1 Install the tested waste fitting on the test device in Figure 1; shutdown the drainage device of waste fitting.

6.7.1.3 Install the tested waste fitting on the test device in Figure 2; shut down the drainage device; apply static water pressure of 150mm water column on the overflow port and maintain it for 5 min.

6.7.1.4 Install the tested waste fitting on the test device in Figure 2; turn on the drainage device, block the drainage port at the end; apply static water pressure of 500 mm water column at the water inlet of drainage device and maintain it for 5 min.

6.7.2 Test on flow performance

Install tested sample on test device in Annex B.1; turn on the drainage device; the continuous water level of drainage fitting, that is used with matching parts such as wash basin, bidet, and washing-tank, is maintained at vertical height of 120^{+2}_{-2} mm compared to water inlet; the continuous water level of drainage fitting that is used with matching part bath-tub is maintained at vertical height of 150^{-2}_{-2} mm compared to the water inlet; after the water level is stabilized, record the flow rate.

6.7.3 Test on overflow performance

Install the tested waste fitting on the test device of Figure 2; the water level of waste fitting, that is used with matching parts such as wash basin, bidet and washing-tank, is maintained 30 mm above the overflow port; the water level of waste fitting, that is used with matching part washing-tank, shall be maintained at 60mm above the overflow port; after the water level is stabilized, record the flow speed.

6.7.4 Test on performance of thermal cycle

Install the tested sample on the test device of Figure 2 according to the use status; turn on the drainage device; introduce hot water at 60^{+2}_{-2} °C; the water flow rate is $7.5^{+0.8}_{-0.8}$ L/min; maintain it for 1.5min; introduce cold water at 21^{+2}_{-2} °C into the water-tank; the water flow rate is $7.5^{+0.8}_{-0.8}$ L/min; maintain it for 1.5min; that is one-cycle. Conduct 7 cycles in total.

6.7.5 Test on anti-installation load performance

Install waste fitting on the test platform according to normal use status; apply the moment of $20^{+0.2}_{0}$ N•m on the thread connection of waste fitting; apply the moment of $2.5^{+0.1}_{0}$ N•m on the side connection nut of puller waste fitting; maintain for 300^{+5}_{0} s then unload; conduct inspection; complete the above test; and inspect sealing performance of product according to 6.7.1.

6.8 Test on bearing performance

Install the sample on the test platform in Figure 3 according to the use status; place a wood-board with the diameter of 50mm and the thickness of 10mm on the tested sample. Apply 1.3kN uniformly on the wood-board along the vertical direction of sample; maintain for 2min. After the test is completed, inspect that the product shall be free from crack;

7.2.4 For exit-factory inspection, take the products of same-category, same-variety and same-model as a batch; the samples for exit-factory inspection are taken from the same batch. Sampling is carried out in accordance with the requirements of GB/T 2828.1-2003, with the general inspection level I, a normal inspection for single sampling plan. After the inspected items are inspected, if all the items are acceptable, then this batch of products shall be determined as acceptable; if one or more items are rejected, then this batch shall be determined as rejected.

7.3 Type inspection

7.3.1 Inspection items

Type inspection items include all those (except 5.1) required in Clause 5.

7.3.2 Inspection conditions

Type inspection is carried out under the following conditions:

a) trial production, type-identification and appraisal of new product;

b) after the product is put into production, in case of significant changes in the design, process and material which may affect the product performance;

c) the production is resumed after production shutdown for more than half a year;

d) the result of exit-factory inspection is significantly different from that of the previous type inspection;

e) during normal production, the type inspection shall be carried out at least once a year.

7.3.3 Batching

Products are batched according to the same-category, same-variety and same-model, with 50~500 products taken as one batch. Less than 50 pieces of products are also taken as one batch.

7.3.4 Sampling and determination

The samples of the type inspection are drawn from the submitted qualified batch. The unqualified quality level (RQL) is 50. The single sampling method of the determination level I in GB/T 2829-2002 is adopted. The sampling and determination are carried out according to those specified in Table 4. After the inspected items are inspected, if all the items are acceptable, then this batch of products shall be determined as acceptable; if one or more items are rejected, then this batch shall be determined as rejected.

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