

## Annex I: product item and specification standard of the Water Efficiency Labeling

### 1. Washing machine

The product includes impeller, agitator, and drum types.

According to the Japanese Industrial Standard JIS C9606 standard test conditions and method, under the washing capacity, high water level, and standard washing stroke of the maximum load, the product's washing performance should be up to more than 1.00; rinsing performance for impeller-type and agitator-type should be up to 0.80 or more, in drum-type should be up to more than 0.60; water extraction performance should reach more than 45%.

According the water consumption amount to do the wash per kilogram of clothes, it is divided into a gold grade and general grade.

- (1) Series of products: only the color, upper cover or door cover shape, upper cover or door cover opening methods, and the appearance / material, etc. are different; can use a common test report.
- (2) For impeller-type and agitator-type products, the water consumption per wash set the gold grade should be 15.0 liters or less per kilogram of clothes, and at the general grade should be 20.0 liters or less per kilogram of clothes.
- (3) For drum-type products, the water consumption per wash at the gold grade should be 8.0 liters or less per kilogram of clothes, and the general grade should be 13.0 liters or less per kilogram of clothes.

### 2. Single flushing Water Closet

Products include the toilet seat, water tank, flush tank parts, and flush valve.

- (1) Series of products:
  - (a) Only the color, toilet up cover modeling, or the water tank cover modeling are different; can use a common test report.

- (b) The same product only has a difference in whether it has a nano coating or not, need to comply with the flushing performance test, and other test items can use a common test report.
  - (c) If the products only have different outfall distances from the wall, they can share the testing report of drainage test, water leakage test, and gas leakage test.
- (2) Dual flushing water closet can be divided into a gold grade and general grade by water consumptions which tested in the water consumption test. Flushing amount at the gold grade shall be below 4.8 liters each time. Flushing amount at the general grade shall be below 6.0 liters each time.
- (3) Dilution factor for residual urine testing of toilets shall be a hundred times or more.
- (4) It shall comply with the Chinese National Standards CNS 3221 performance requirements on flushing, drainage, gas leakage and water leakage.
- It shall comply with the Chinese National Standards CNS 3220-1 connection tightness quality requirements.
- It shall comply with the drain line transport characterization test; the average floating distance of each flush ball is up to 13.0 meters or more.
- (5) The flush tank parts valve should be consistent with the drain valve seal and durability test, and should pass 100,000 times of testing. The flushing valve should pass 200,000 times operates test. Comply to Chinese National Standards CNS 8088, the flush tank parts and the flush valve should pass the water seal performance test after durability test.
- (6) After the flush tank parts inlet device operates 100,000 times in accordance with Chinese National Standards CNS 8088 durability performance test method of the flush ball valve, it is required to pass the sealing performance test and shall comply with the inlet valve anti-siphon test.

- (7) If the toilet water tank fittings belong to an electronically controlled valve, comply with Chinese National Standards CNS 12566 test on a combination of temperature and humidity and the quality regulation on EMC (electromagnetic compatibility) shall be presented.

### 3. Dual flushing water closet

Refers to a flushing amount being divided into two or more stages, but does not contain a non-stage; the product include the toilet seat, water tanks, flush tank parts and flush valve.

- (1) Series of products:
- (a) Only the color, toilet up cover modeling or the water tank cover modeling are different; can use a common test report.
  - (b) The same product only has a difference in whether it has a nano coating or not, need to comply with the flushing performance test, and other test items can use a common test report.
  - (c) If the products only have different outfall distances from the wall, they can share the testing report of drainage test, water leakage test and gas leakage test.
- (2) Dual flushing water closet can be divided into a gold grade and general grade by water consumptions which tested in the water consumption test. The flushing for defecation at the gold grade shall be below 4.8 liters and for urination shall be below 3.0 liters.
- The flushing for defecation at the general grade shall be below 6.0 liters and for urination shall be below 3.0 liters.
- (3) During defecation, the dilution factor for a residual urine test shall be a hundred times or more. During urination, the dilution factor for a residual urine test shall be more than 20 times.
- (4) It shall comply with the Chinese National Standards CNS 3221 performance relevant requirements on flushing, drainage, gas leakage and water leakage.

It shall comply with the Chinese National Standards CNS 3220-1 connection tightness quality requirements.

It shall comply with the drain line transport characterization test; the average floating distance of each flush ball is up to 13.0 meters or more.

- (5) The flush tank parts valve should be consistent with the drain valve seal and durability test, and should pass 50,000 times of testing for defecation and urination respectively. The flushing valve should pass 100,000 times operates tests. Comply to Chinese National Standards CNS 8088, the flush tank parts and the flush valve should pass the water seal performance test after durability test.
- (6) After the flush tank parts inlet device operates 100,000 times in accordance with the Chinese National Standards CNS 8088 durability performance test method of the flush ball valve, it is required to pass the sealing performance test and comply with the inlet valve anti-siphon test.
- (7) If the toilet water tank fittings belong to an electronically controlled valve, comply with Chinese National Standards CNS 12566 test on a combination of temperature and humidity and the quality regulation on EMC (electromagnetic compatibility) shall be presented.

#### 4. General faucet

Products include vertical, long neck, hot and cold hybrid type and other faucets.

- (1) Series Product Patterns
  - (a) If only the product's handle appearance, base height, etc., are different, the test report can be shared.
  - (b) If only the shapes of water outlet of the products are different, the durability property test report can be shared.
  - (c) If the same axis is used for the products, the durability property test report can be shared, but each product must meet the water output performance test and water stop performance test.

- (2) In line with the Chinese National Standards CNS 8088 water-saving faucet water output performance test, the maximum flow per minute shall not exceed 9.0 liters, nor shall the flow be less than 0.5 liters.
- (3) According to the Chinese National Standards CNS 8088 faucet durability performance test, after operation of 500,000 times for the product during the precision ceramic axis, and operation of 200,000 times for other non-precision ceramic axes, it is necessary to pass the water stop performance test.

#### 5. Induction faucet

- (1) Series Product Patterns
  - (a) If only the appearances and models of products are different, test report can be shared.
  - (b) If the same control components and circuit board design layout are used for products, the durability property test report can be shared, but each product must meet the water output performance test and water stop performance test.
- (2) In line with the Chinese National Standards CNS 8088 water-saving faucet water output performance test, the maximum flow per minute shall not exceed 9.0 liters, nor shall the flow be less than 0.5 liters.
- (3) According to the Chinese National Standards CNS 8088 faucet durability performance test, after operation of 500,000 times, it is necessary to pass the water stop performance test.
- (4) It shall comply with the quality standards of the Chinese National Standards CNS 12566 and EMC (Electromagnetic Compatibility).

#### 6. Auto-closing faucet

- (1) Series Product Patterns:
  - (a) If only the product's handle appearance, base height, etc., are different, the test report can be shared.
  - (b) If only the shapes of the water outlet of products are different, the durability property test report can be shared.

- (c) If the same axis is used for the products, the durability property test report can be shared, but each product must meet the water output performance test and water stop performance test.
- (2) In line with the Chinese National Standards CNS 8088 water-saving faucet water output performance test, the maximum flow per minute shall not exceed 9.0 liters, nor shall the flow be less than 0.5 liters.
- (3) Each time the water supply time is 4.0 to 6.0 seconds.
- (4) According to the Chinese National Standards CNS 8088 faucet durability performance test, after operation of 200,000 times, it is necessary to pass the water stop performance test.

## 7. Shower head

- (1) Series product patterns: in case of only different colors, test report can be shared.
- (2) In line with the Chinese National Standards CNS 15167 flow test, the maximum flow per minute shall not exceed 10.0 liters, nor shall it be less than 5.0 liters.
- (3) In line with the Chinese National Standards CNS 15167 leakage test, if there is the section switch, it should be consistent with operational requirements.

## 8. Flush urinals

The product contains flushers and urinals.

- (1) Series product patterns: if the same flusher is adopted, the durability property test report can be shared.
- (2) According to the Chinese National Standards CNS 8088 the water output performance test of flush valve, each flush quantity should be below 3.0 liters.
- (3) The ceramic or non-ceramic products must comply with the Chinese National Standards CNS 3221 wash test.

- (4) According to the Chinese National Standards CNS 8088 durability property test of the flush valve head, after operation of 200,000 times, it must pass the water stop performance test.
- (5) If products contain electronic control devices, they must comply with EMC (Electromagnetic Compatibility) and the Chinese National Standards CNS 12566 requirements.

## 9. Waterless urinals

Products include the urinal body and its related accessories.

- (1) The product does not need to flush.
- (2) The ceramic products are to meet the tests of ASME A112.19.19 of the American Society of Mechanical Engineers.
- (3) The plastic material products are to meet the tests of the ANSI Z124.9 of American National Standards Institute.
- (4) If products contain electronic control devices, they must comply with EMC (Electromagnetic Compatibility) and the Chinese National Standards CNS 12566 requirements.

## 10. Dual flusher

It is used for the toilet, with a sub-flushing function, including the toilet tank drain valve and flush valve.

- (1) In line with the flush amount test, the amount of water used for urination shall be less than 50% of the amount of water used for defecation or less than 3.0 liters.
- (2) In line with the drainage valve flow test, the average defecation and urination flushing flow per second should be more than 1.6 liters separately.
- (3) The toilet tank drain valve should be consistent with the drainage valve seal and durability test, passing the defecation and urination test of 50,000 times separately. According to the Chinese National Standards CNS 8088 durability test method, after operation of 100,000 times for defecation and urination separately, flushing valve should pass the water stop performance test.

- (4) If product contains water inlet, after operation of 100,000 times for the water inlet, it shall pass the water stop performance test in accordance with the Chinese National Standards CNS 8088 float valve durability property test method, and it should be consistent with the inlet valve anti-siphon test.
- (5) In case of electronic control valve product, it must comply with the quality requirements of the Chinese National Standards (CNS) 12566 and EMC (Electromagnetic Compatibility).

#### 11. Water saving accessories

Water saving accessories refer to the urinal flusher, and the accessories installed in the toilet water tank, faucet, flushing valve, shower head and other water supply equipment, which can reduce the water amount used.

- (1) Urinal flusher: divided into manual and automatic type.
  - (a) According to the Chinese National Standards CNS 8088 water output performance test of the flush valve, each flush amount should be below 3.0 liters.
  - (b) According to the Chinese National Standards CNS 8088 durability property test of the flush valve, after operation of 200,000 times, it must pass the water stop performance test.
- (2) According to the test conditions of flushing amount test or the Chinese National Standards CNS 8088, toilet tank parts or general flushing valve accessories can save 30 percent to 50 percent (inclusive) after installation.
- (3) After installation of the faucet or showerhead fittings, under the test conditions in the Chinese National Standards CNS 8088 or CNS 15167, the flow per minute can save 20 percent to 90 percent (inclusive).
- (4) If water-saving accessories have switches or buttons, according to the Chinese National Standards CNS 8088 durability property test, after operating 50,000 times, they must pass the water stop performance test.
- (5) After toilet water tank electronic flushing products operate 50,000 times, according to the Chinese National Standards CNS 8088 flush valve



durability test method, they should be able to normally operate and have no damage.

- (6) After operating faucet electronic products 500,000 times, according to the Chinese National Standards CNS 8088 faucet durability property test, they are to pass the water stop performance test.
- (7) If it is an electronic control valve product, it must comply with the quality requirements of the Chinese National Standards CNS 12566 and EMC (electromagnetic compatibility).

Note: If the above specifications have their own provisions of the test method, they are according to the provisions; if test method has not been set, they are handled according to the appendix.

## Appendix 1: Test methods

### 1. The water consumption test

#### (1) Test conditions

- (a) The water closet must be kept in the factory state or assembled by the manufacturer at their own discretion.
- (b) When using the tank for water closet, adjust the supply water to the stop state.
- (c) While using the flush valve (pressure flush valve), there should be  $1.0\text{kgf/cm}^2$  dynamic pressure inflow conditions.
- (d) The temperature of the water used should be room temperature.

#### (2) Test operation

- (a) When using the tank for the water closet, the water level is in the automatic stop state of the supply water.
- (b) The water closet bowl is filled with water.
- (c) Place the cylinder in the bottom of the sewage pipe to receive the flushing water, and then flush and measure the flush volume.
- (d) If the designated sample is a dual flushing or multiple flushing water closet, the flush volume for each stage shall be tested separately.

### 2. The water closet urine residue test

#### (1) Test conditions

- (a) The temperature of the water used should be room temperature.
- (b) The supply water is in the stop state.
- (c) With the conductivity meter to measure the dilution factor, the conductivity meter must contain an automatic temperature correction function.

#### (2) Test operation

- (a) Dispense the concentration of 5.00%, 0.05% (diluted 100 times) and 0.25% (diluted 20 times) saline with tap water, and measure the conductivity.

- (b) The water seal is filled with concentration of 5.00% saline, press the defecation or urination flush button, and wait for flushing complete.
- (c) After the water closet bowl is stable, fill the water closet bowl by tap water, when the saline mix with tap water , measure the conductivity and compare to the dilution factor.

### 3. Drain line transport characterization test

#### (1) Test conditions

- (a) Refer to the ASME A112.19.2 test standard of the American Society of Mechanical Engineers.
- (b) The test medium shall consist of 100 polypropylene balls with the following characteristics:
  - (i) weight:  $3.0 \pm 0.2$  g; and
  - (ii) diameter:  $19 \pm 0.4$  mm.
- (c) The assembly shall have an NPS-4 rigid pipe that
  - (i) is at least 18 m (60 ft) long;
  - (ii) runs from the water closet and provides a straight run with a 2% slope.
- (d) The temperature of the water used should be room temperature.

#### (2) Test operation

- (a) The water seal is filled with water.
- (b) Place 100 balls in the water closet bowl, press the defecation flush button, and let the water stop naturally.
- (c) Confirm and record the number of balls in the water closet bowl and the number of balls in each 3 m (10 ft) of pipe. Those discharged from pipe are calculated as 18 m (60 ft). Calculate the weighted carry distance.

### 4. The drainage valve seal and durability test

#### (1) Test conditions

- (a) A flush valve should be installed in the standard water tank. If not feasible, it will be tested in the original water tank.

- (b) The volume of water per flush is 6.0 liters. If the volume of the largest flush is less than 6.0 liters, that maximum volume will be used as the test volume.
- (c) The temperature of the water used should be room temperature.

(2) Test operation

- (a) Check the flush valve for leaks after installing it in the standard water tank.
- (b) The action of turning the flush valve on and off per time will be counted together as one operation. The single flush will be operated 100,000 times. The dual flush for urination and defecation will be operated 50,000 times apiece.
- (c) Check the flush valve for leaks or malfunctions after the operation has been complete.

5. The fill valve anti-siphon test

(1) Test conditions

- (a) Refer to the ASSE 1002 Anti-Siphon Test standard of the American Society of Hygiene Engineering.
- (b) The temperature of the water used should be room temperature.

(2) Test operation

- (a) The fill valve and related parts should be installed in the standard water tank and the water injection pipe should be placed outside the overflow pipe.
- (b) Insert a wire with a diameter of 0.8mm into the fill valve hole to confirm that the fill valve can be fully opened.
- (c) Pour water into the water tank until the critical level, and add some dyes to dye it.
- (d) Turn on the vacuum motor. When reaching the 10, 15, 20, 25 inch mercury vacuum each time, keep it for a minute.
- (e) Observe whether there is any staining in the transparent tube.

#### 6. The standard water tank

The inner dimension of the length, width and height of standard water tank are  $400\text{ mm} \times 175\text{ mm} \times 300\text{ mm}$ .

#### 7. Flush valve discharging test

##### (1) Test conditions

- (a) The temperature of the water used should be room temperature.
- (b) The flush valve should be installed in the standard water tank.
- (c) Pour water into the water tank until the effective water amount of 6.0 liters, and mark on the standard water tank, open the flush valve to the natural closure and scale in the existing water level.

##### (2) Test operation

- (a) Pour 2.5 liters of water into the water tank and mark (L2), then add 3.0 liters of water and mark (L1), finally add 0.5 liters of water and mark (L0).
- (b) Push the button to flush, record the time from L1 to L2 and calculate the volume of flush per minute.

#### 8. Self-closing faucet water supply time test for each time

##### (1) Test conditions

- (a) The temperature of the water used should be room temperature.
- (b) Self-closing faucet installation specimen is according to CNS 8088 water output performance test method.
- (c) Setting the water pressure of water output as 0.1MPa ( $1.0\text{kgf} / \text{cm}^2$ ).

##### (2) Test operation

- (a) Install and secure the self-closing faucet.
- (b) Measure and record the time required for 1 cycle from the start of the water output to stop.