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Replacing GB/T 20810-2006

Toilet tissue paper (including toilet tissue base paper)

卫生纸(含卫生纸原纸)

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Toilet tissue paper (including toilet tissue base paper)

1 Scope

This Standard specifies terms and definitions, classification, requirements, test methods, inspection rules, marks, packaging, transport and storage for toilet tissue paper (including toilet tissue base paper).

This Standard is applicable to toilet tissue paper used in daily life and toilet tissue base paper used for processing toilet tissue paper sold externally.

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 450, *Paper and board - Sampling for testing*

GB/T 451.1, *Paper and board - Determination of size and deviation*

GB/T 461.1, *Paper and board - Determination of capillary rise (Klemm method)*

GB/T 462, *Paper and board - Determination of moisture content*

GB/T 742, *Fibrous raw material, pulp, paper and board - Determination of ash*

GB/T 1541, *Paper and board - Determination of dirt*

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

GB/T 7974, *Paper, board and pulps - Measurement of diffuse blue reflectance factor - D65 brightness (Diff/Geometry, Outdoor daylight conditions)*

GB/T 8942, *Paper - Determination of softness*

GB/T 10739, *Paper, board and pulps - STANDARD atmosphere for*

Softness is measured according to GB/T 8942. Slit width is 5mm. Specimen size is 100mm×100mm. If the specimen size does not reach 100mm, it shall be converted to 100mm and report the result. Toilet tissue paper shall be measured according to the finished layer. Whether it is an embossed or un-embossed specimen, it shall be uncovered and then overlapped for measurement. When sampling and testing, avoid embossed or folded parts. And the bump pattern is tested with 3 sheets facing up. Report the test results with the vertical and horizontal average.

NOTE 1: If the specimen size does not reach 100mm, the softness conversion method is as follows:

a) Longitudinal softness = measured longitudinal softness × 100mm / transverse size of specimen;

b) Transverse softness = measured transverse softness × 100mm / longitudinal size of specimen.

NOTE 2: When measuring longitudinal softness, the longitudinal direction of the specimen is perpendicular to the direction of the slit. When measuring the lateral flexibility, the longitudinal direction of the specimen is parallel to the direction of the slit.

NOTE 3: If the specimen cannot be completely peeled off the delamination, then directly test without delamination, and it must be noted in the report.

6.7 Migrating fluorescent substance

Place the specimen under the UV lamp. Under UV light with wavelengths of 254nm and 365nm, check if there is fluorescence. If the specimen has no fluorescence under the UV lamp, it is judged that there is no migrating fluorescent substance. If the specimen has fluorescence phenomenon, perform the measurement of migrating fluorescent substance according to Clause 5 of GB/T 27741-2011.

6.8 Ash content

Ash content is determined according to GB/T 742. Burning temperature is 575°C.

6.9 Spherical burst resistance

Spherical burst resistance is determined according to GB/T 24328.7. It is determined by the number of finished layers.

6.10 Dispersibility

Dispersibility is determined according to Annex A.

tissue paper) with a sensitivity of 0.1g or a scale with a sensitivity of 1kg (toilet tissue base paper) to respectively weigh specimen mass. Subtract the nominal value from the mass of each specimen. Express results in maximum shortage. Round the result to integer. The number of sections is determined according to G.4 in Annex G of JJF 1070-2005. Test 3 complete packages for each sample. Express results in maximum shortage. Round the result to integer.

6.18.2 Size deviation

6.18.2.1 Measurement of size deviation for flat-cut toilet tissue paper and tissue toilet tissue paper: Take 10 specimens from any package. Use steel ruler with 1mm graduation to measure the length and width of each specimen. And calculate the average separately. The average value minus the nominal value to indicate the size deviation. Round the result to integer.

6.18.2.2 Measurement of width deviation for roll toilet tissue paper, disc type toilet tissue paper and toilet tissue base paper: Take 3 complete specimens for each sample. Use steel ruler or steel tape with 1mm graduation to measure the width of each specimen. Express the width deviation by subtracting the nominal value from the average width value of 3 specimens. Round the result to integer.

6.18.2.3 Measurement of pitch deviation for roll toilet tissue paper and disc type toilet tissue paper: Take 1 roll (tray) of toilet tissue paper. After removing the first 15 sections, take 10 consecutive sections. Use steel ruler with 1mm graduation to respectively measure the length of each of the 10 sections. Calculate the average. Use the average value to minus the nominal value to express the specimen pitch deviation. Round the result to integer.

6.19 Appearance quality

Visually inspect the appearance quality. For the detection of toilet tissue paper defects, breakages, hard blocks, raw grass tendons, pulp masses and other paper defects and foreign matter as well as other appearance paper defects, it shall choose any whole roll (disc, package). Open completely. Visually inspect it.

7 Inspection rules

7.1 The manufacturer shall ensure that the toilet tissue paper and toilet tissue base paper produced comply with this Standard or contract. The products of the same raw material and the same specification, with one delivery quantity, are one batch. Each batch of products shall be accompanied by a product qualification certificate.

7.2 If the microbiological indicators or raw materials of a batch of toilet tissue

unacceptable.

7.5 If the purchaser has objections to the quality of the product, it can notify the supplier for a joint re-inspection within three months after the arrival of the goods or entrust a mutually agreed inspection department to conduct the re-inspection. If the re-inspection result does not meet the requirements of this Standard, the batch will be determined as unacceptable and the supplier is responsible for processing. If it meets the requirements of this Standard, the batch is determined as acceptable and the purchaser is responsible for processing.

8 Marks, packaging, transport and storage

8.1 Sales marks and packaging

8.1.1 The following content shall be marked on the sales package of the product:

a) Product name (including typeface of toilet tissue paper and toilet tissue base paper);

b) Executive standard number;

c) Main raw materials: it shall be marked with "primary wood pulp (fiber) or virgin non-wood (grass or bamboo or reed or bagasse) pulp (fiber) or virgin mixed pulp (fiber) or recycled pulp (fiber)";

d) Production date and shelf life, or production batch number and limited use date;

e) Product specifications: for roll toilet tissue paper and disc type toilet tissue paper, it shall mark width, pitch, number of layers; for flat-cut toilet tissue paper and tissue toilet tissue paper, it shall mark length, width and number of layers; for toilet tissue base paper, it shall mark roll width;

f) Product quantity: or roll toilet tissue paper and disc type toilet tissue paper, it shall mark roll weight or number of sections (segments); for flat-cut toilet tissue paper, it shall mark packaging mass or number of sheets; for tissue toilet tissue paper, it shall mark number of tissues; for toilet tissue base paper, it shall mark roll weight;

g) Product quality level and product conformity mark;

h) Name, address, and contact information of producer or organization in charge;

i) Toilet tissue paper shall be marked "for toilet use";

round table with grooves is fixed at the center of the upper surface of the disc. 6 triangular prisms are evenly inlaid on the upper surface of the disc. 8 blades are evenly embedded on the circumference of the disc.

A.2 Specimen extraction

Take any roll (pack or disc) of toilet tissue paper. Cut out two specimens of 100mm×100mm (finished product layer). The specimen taken shall be representative. If the width of the specimen is less than 100mm, take the specimen with an area of 0.01m^2.

A.3 Test steps

A.3.1 Adjust the instrument level. Check the instrument to ensure the normal operation of the instrument.

A.3.2 Fill the plum tube with tap water to make the water volume in the cylinder reach 5L. Turn on compressed air. Set pressure to 0.4MPa and air flow to 10L/min. Make bubbles evenly pass from the pores into the water in the cylinder. Start the rotor. Set the rotor speed to 350r/min. After the vortex in the cylinder is stable, the height from the water surface to the bottom of the vortex is about one-third of the total height of the water surface in the cylinder. Set the test time to 40s. Put the specimen into the center of the vortex in the cylinder. During placement, make sure that the paper surface is perpendicular to the horizontal. At the same time, start timing. Turn off the motor after 40s. And stop ventilation. Observe whether the sample in the cylinder is dispersed. If one or more fragments appear, it is determined that the dispersibility of the specimen is conforming, otherwise it is determined as nonconforming.

NOTE: If the specimen sinks to the bottom of the cylinder during the test, the specimen is broken by the bottom rotor, then this test shall be invalid. It needs to retest. If the two tests are invalid, it can appropriately increase the gas flow or reduce the rotor speed, to prevent the specimen from sinking to the bottom of the cylinder. In this case, it needs to be indicated in the report.

A.3.3 After the test, start drain button. The motor runs at high speed to completely break the specimen. After 10s, the motor automatically stops rotating and opens the drain valve. Discharge all water and specimen debris in the cylinder. Fill with proper water again to clean the cylinder wall and rotor. Drain the water. Prepare the next test.

NOTE: If the debris cannot be completely discharged after cleaning once, consider multiple cleanings.

A.3.4 Test two specimens for each sample.

A.4 Expression of results

B.2.1 Sampling and testing shall be carried out under the standard atmospheric conditions specified in GB/T 10739.

NOTE: During the powder drop rate test, the specimen does not need to be treated for constant temperature and humidity.

B.2.2 Take any roll (disc or pack) of toilet tissue paper. Remove the outer packaging. Conduct sampling according to the following method:

a) Roll toilet tissue paper: Weigh the mass of toilet tissue paper after removing the outer packaging as m_1. Fold the toilet tissue paper into a specimen with a length of about 200mm. Keep the long sides flush when folded. In order to facilitate the test, the larger mass roll toilet tissue paper can be divided into multiple specimens;

b) Flat-cut toilet tissue paper or tissue toilet tissue paper: Unfold and stack each piece of toilet tissue paper. Keep the long side flush when stacked. Take about 150g of specimen. Weigh its mass as m_1. For flat-cut toilet tissue paper or tissue toilet tissue paper less than 150g, take the whole package as a specimen to test;

c) Disc toilet tissue paper: Fold the toilet tissue paper into a specimen with a length of about 200mm. Keep the long sides flush when folded. Take about 150g of specimen. Weigh its mass as m_1.

B.2.3 Fix one end of the long side of the specimen to the specimen holder. When fixing, the surface of the specimen shall be perpendicular to the swing direction. Ensure that the specimen shall not touch the inner wall of the box during the measurement.

B.2.4 Wear gloves during the test. The specimen shall be handled with care to avoid affecting the test results.

B.2.5 Start the instrument and start timing. Let the sample swing in the box for 2min.

B.2.6 After the test, turn off the instrument. Remove the specimen. Weigh the mass of the specimen (if it is roll toilet tissue paper with a core, weigh it together with the core), as m_2. The larger mass of roll toilet tissue paper is calculated as m_2 (including the mass of the core) by the sum of the mass of the specimen after multiple measurements.

B.2.7 After unpacking the specimen, it shall immediately test. Complete the test within 1h.

B.3 Expression of results

Annex C

(normative)

Determination of microbial indicators

C.1 Preparation of medium and reagents

C.1.1 Nutrient agar medium

Preparation: Weigh 33g of nutrient agar to dissolve in 1Lof distilled water. Heat and boil until it is completely dissolved. Dispense. After autoclaving at 121°C for 15min, it is ready for use.

C.1.2 Lactose bile salt fermentation tube

Preparation: Weigh 35g of lactose bile salt fermentation medium to dissolve in 1Lof distilled water. After it is completely dissolved, dispense each tube with 50mL. And put in an inverted tube. After autoclaving at 115°C for 15min, it shall be obtained.

NOTE: When making double-material lactose bile salt fermentation tube, except distilled water, other ingredients are doubled.

C.1.3 Eosin methylene blue agar medium

Preparation: Weigh 36g of eosin methylene blue agar medium to dissolve in 1Lof distilled water. Soak for 15min. Heat and boil until it is completely dissolved. After autoclaving at 115°C for 15min, cool to 50°C~60°C. Shake the culture medium and pour into sterile plates for later use.

C.1.4 Lactose fermentation tube

Preparation: Weigh 25.3g of lactose fermentation medium to dissolve in 1Lof distilled water. Soak for 5min. Heat and boil until it is completely dissolved. Dispense into test tubes with inverted tubes. After autoclaving at 115°C for 15min, it shall be obtained.

C.1.5 Blood agar medium

Preparation: Heat and melt the sterilized nutrient agar. When it cools to about 50°C, under aseptic operation, according to the ratio of nutrient agar: defibrillated blood is 10:1, add defibrinated blood. Shake well. Pour into a sterile dish. Place in a refrigerator for later use.

C.1.6 Rabbit plasma

Completely mix and shake well. After centrifugal precipitation, aspirate the supernatant to obtain.

NOTE: The above mediums are all finished products. The amount used can be determined according to the product specification.

C.2 Product collection and sample processing

C.2.1 In three large packages of the same batch number, at least 12 samples of the smallest sales packaging are randomly selected. A quarter of the sample is used for testing. A quarter of the sample is used for sample reservation. The other half of the sample (can be sealed on-site) for re-inspection if necessary. The minimum sales package of the sample must not be damaged. Before testing, it must not be opened.

C.2.2 On a super clean bench, use aseptic method to open at least 3 minimum sales packages. Weigh 10g±1g of sample from it. Cut into pieces and add to 200mL of sterile saline. Completely mix well to obtain a saline solution.

C.3 Detection of the total number of bacterial colonies

C.3.1 Operation steps

After the above sample liquid settles naturally, take the supernatant for colony count. Inoculate a total of 5 plates. Add 1mL of sample solution to each plate. Then use 15mL~20mL of nutrient agar that has been melted down to 45°C. Pour into the plate. Completely mix well. After the agar solidifies, flip the plate. Incubate at 35°C±2°C for 48h. Then count the number of bacteria on the plate (when the number of colonies on the plate exceeds 200, it shall be diluted before counting).

C.3.2 Result report

Plates with flaky colonies shall not be used. Count the colonies on the plates that meet the requirements. Calculate the result according to formula (C.1):

$$X = A \times K / 5 \qquad \cdots\cdots (C.1)$$

Where,

X - Total number of bacterial colonies, in colonies forming unit per gram (CFU/g);

A - Total number of bacterial colonies on 5 nutrient agar plates, in colonies forming unit per gram (CFU/g);

K - Dilution factor.

is golden yellow, large and protruding, round, with smooth surface, with hemolytic circle around. Pick typical colonies and smear them for Gram stain microscopy. If they are seen, arrange in a grape shape, without spores and capsules. It shall carry out the following tests:

a) Mannitol fermentation tube test. Inoculate the above colonies into mannitol medium. Incubate at 35°C±2°C for 24h. Ferment mannitol. The one who produces acid is positive.

b) Plasma coagulase test. SLIDE METHOD: Take clean and dry slides. → Respectively add 1 drop of saline and 1 drop of rabbit plasma to both ends. → Pick the colonies and mix with the two for 5min. It shall be negative if both have no coagulation. If there are clumps or granular coagulation in the plasma, but the physiological saline is still uniformly turbid without coagulation, it shall be positive. If both of them have coagulation phenomenon, then perform the tube coagulase test. TEST TUBE METHOD: Draw 0.5mL of 1:4 fresh plasma. Place in sterile cuvette. → Add the same amount of bacteria to be tested for 24h, and 0.5mL of broth culture. Mix well. → Put in 35°C±2°C incubator or water bath. → Observe every 0.5h. → When a clot appears within 24h, it shall be positive. At the same time, respectively use 0.5mL of the broth culture of known plasma coagulase positive and negative strains as a positive and negative control.

C.5.2 Result report

Where there are suspicious colonies growing on the agar plate, the microscopic examination is gram-positive staphylococcus, it can ferment mannitol to produce acid, the plasma coagulase is positive, it may report that staphylococcus aureus is detected in the sample.

C.6 Detection of streptococcus hemolyticus

C.6.1 Operation steps

Take 5mL of sample solution. Add to 50mL of glucose meat infusion broth. Incubate at 35°C±2°C for 24h. Streak the culture into blood agar plates. Incubate at 35°C±2°C for 24h. Observe the characteristics of the colony. Streptococcus hemolyticus is off-white on the blood plate, translucent or opaque, with needle-like protrusions, smooth surface, neat edges, and a colorless transparent hemolytic circle around it. Take typical colonies for smear Gram stain microscopy. It shall be gram-positive, cocci arranged in a chain. If the microscopic examination meets the above conditions, the streptokinase and bacitracin sensitivity test shall be performed.

a) Streptokinase test. Draw 0.2mL of potassium oxalate plasma. → Add

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