

ICS 85.040

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

GB/T 2678.1-2026

Replacing GB/T 2678.1-1993

Pulps - Determination of screened components

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Issued on: April 30, 2026

Implemented on: November 1, 2026

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 1 of GB/T 2678. GB/T 2678 has the following parts published.

- Pulp sieve analysis method (GB/T 2678.1);
- Determination of water-soluble chlorides in paper, paperboard and pulp (GB/T 2678.2);
- Determination of chlorine consumption (delignification degree) in pulp (GB/T 2678.3);

---Determination of water-soluble sulfates in paper, paperboard and pulp (GB/T 2678.6). This document supersedes GB/T 2678.1-1993, "Method for Determination of Pulp Sieve Components". Compared with GB/T 2678.1-1993, the only changes are structural adjustments. Aside from editorial changes, the main technical changes are as follows:

- a) The scope has been changed (see Chapter 1, Chapter 1 of the 1993 edition);
- b) Added terms and definitions for weight-average fiber length and L-factor (see
- c) The description of the number of screening containers in the equipment has been changed (see 5.1,
- 4.1 of the 1993 edition);
- d) The sample taking and preparation methods were changed (see Chapter 6, Chapter 5 of the 1993 edition);
- e) The descriptions of the water inlet and sample addition procedures in the test protocol have been revised (see
- 7.4 and 7.5, and

6.2.4 in the 1993 edition);

5 Instruments and Equipment

5.1 Sieving Instrument A Pall fiber sieve for papermaking consists of a four- or five-stage stepped elliptical sieve container, connected to which are the following main components. part.

- a) Agitator. Installed inside the screening container, driven by a motor at a speed of (580 ± 40) r/min, to ensure thorough dispersion of fibers in water. They also move in a directional manner, with most fibers moving parallel to the sieve plate, so that the fibers can be sieved according to length;
- b) Baffle. Installed in front of the screen plate to prevent water and fibers from rushing vertically towards the screen plate;
- c) Sieve plate. Made of stainless steel, used for grading fibers. The mesh size of the sieve plate can be selected according to the different properties of the pulp.
- d) Screen plate. Installed close to the screen mesh on the screen plate, the pulp suspension flows through the screen plate to the drain outlet;
- e) Sealing tube. used for sealing the connection between the sieve plate and the container;
- f) Filtration and drainage device. used to filter fibers from each screening container, and can employ vacuum suction cups or bag filters for drainage. The suction cup connects to the vacuum pump, improving drainage efficiency. The cloth bag can be made of high-quality bleached or unbleached fine cloth. For easy fiber collection, the cloth... The bag can be made in a triangular shape, preferably with a curved bottom. The fabric used should not contain any filler or adhesive.

Note. Different types of sieve analyzers from different manufacturers have poor reproducibility of test results.

5.2 Dissociator The standard dissociator shall comply with the requirements of GB/T 24327, and the circulating dissociator shall comply with the requirements of Appendix D of GB/T 29285-2012.

5.3 Oven It can maintain a temperature of $(105 \pm 2)^{\circ}\text{C}$.

5.4 Electronic Balance The graduation values were

0.1 mg and 1 mg, respectively.

5.5 Weighing Box Aluminum boxes with a diameter of 50mm to 70mm.

5.6 Filter paper The filtration time meets the requirements of type 101 or type 201 in GB/T 1914-2017.

6 Sample collection and preparation

6.1 If evaluating a batch of pulp samples, sampling should be performed according to GB/T 740. If the test is used to evaluate other types of samples, it should be ensured that... The samples taken are representative.

6.2 Determine the moisture content of the sample according to GB/T 462.

6.3 Chemical pulps shall be dissociated according to GB/T 24327; mechanical pulps shall be dissociated according to GB/T 29285. After dissociation, the pulp shall be diluted with water. The concentration of the diluted slurry shall be determined according to the provisions of GB/T 5399, up to approximately 0.3%.

6.4 For chemical pulp, (10.000 ± 0.050) g of oven-dried pulp sample may also be weighed and dissociated according to GB/T 24327. The total dissociated volume is... (2000 ± 25) mL. Wood pulp and bamboo pulp dissociate at 75000 rpm, straw pulp dissociates at 45000 rpm. If the pulp is wet or liquid, dissociation... 15000r.

Note. Generally, the sieving results of each fraction are expressed as a percentage; therefore, the sample addition amount does not need to be accurate to 10g. For air-dried slurry samples, estimate the amount first. To determine the moisture content, weigh approximately 10g of oven-dried pulp sample. Simultaneously, measure the moisture content of another sample; the result will be used to calculate the accuracy of the sample added to the sieve analyzer. Oven-dried mass. If the oven-dried mass is between 9g and 11g, the sample mass has no significant effect on the mass fraction of each fraction.

7 Experimental Procedure

7.1 Select the appropriate series of screen plates with different mesh sizes based on the pulp fiber length. For long fiber pulp, select 10-mesh, 14-mesh, 28-mesh, or 48-mesh screen plates. For medium fiber pulp, choose 14-mesh, 28-mesh, 48-mesh, or 100-mesh sieves; for short fiber pulp, choose 28-mesh, 48-mesh, 100-mesh, or 150-mesh sieves. 200-mesh series sieve plates. See Table 1 for a comparison table of basic sieve plate mesh and aperture dimensions.

7.2 Thoroughly clean all containers and sieve plates of the sieve separator (5.1) to ensure that there are no fibers or attachments on the inner walls of the containers, the agitator and the sieve plates.

7.3 Load each level of sieve plate into the sieving container one by one, and then install the partition plate.

7.4 Open the water inlet and adjust the flow rate so that the constant-level water tank just overflows, or adjust the inlet flow rate to (11.0 ± 0.5) L/min. Wait for each stage... After filling all the screening containers with water, start the motor.

7.5 Weigh out 10.000±

0.050 g of the dissociated pulp (

6.3 or 6.4) with oven-dry weight, and dilute with water to a total volume of approximately 3333 mL (pulp). (Pulp concentration approximately 0.3%). Turn off the water inlet and immediately inject the diluted slurry into the primary screening container at a uniform rate within 18 seconds. Start metering simultaneously with sample addition. After the sample is added, turn on the water inlet and continue sieving for $20 \text{ min} \pm 10 \text{ s}$. At the end of sieving, turn off the water inlet and wait for the final sieving volume to reach the set volume. When the device does not overflow, turn off the motor.

7.6 Collect the slurry from each screening container using a vacuum suction cup assembly or a cloth bag. During the screening process, pre-weighed filter paper can be loaded into the container. Place the vacuum suction cup on the container, or attach a cloth bag to the receiving tray. After screening, open the drain and collect the slurry from each stage container separately. If necessary, circulate the water. Slurry that passes through a 200-mesh sieve can be collected using a cloth bag.

7.7 Thoroughly rinse the inner walls of each container and all parts of the sieve plate. After all fibers have been drained from the container, remove the filter pad, fold it in half to form a semicircle, and... Mark for identification. If using a cloth bag for collection, squeeze the collected fibers dry in the bag and then transfer them to a pre-weighed weighing box (5.5).

7.8 The fibers collected in

7.7 were dried in an oven (5.3) at $(105 \pm 2)^\circ\text{C}$ until constant weight and then weighed to an accuracy of

0.1 mg.

8 Calculation

8.1 The mass fraction of fibers (fractions) remaining on different mesh screens is calculated according to formula (1), and the mass fraction of fibers flowing through the final screen is calculated according to... Calculate using formula (2).

8.2 Calculation of Weight Average Fiber Length (LW). The weight of each grade was determined by sieving test, and then the weight of each grade was measured separately using a fiber length analyzer. The average fiber length (l) of each segment is calculated using formula (3).

8.3 Calculation of L factor (Lf). The L factor is calculated according to formula (4), and the result is expressed as a percentage.

9. Results indicate The results are reported using quality scores at each level. Example.