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

GB/T 17634-2019

Replacing GB/T 17634-1998

**Geotextiles and geotextile-related products - Determination of
the characteristic opening size - Wet sieving method**

土工布及其有关产品 有效孔径的测定 湿筛法

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Symbols
- 4 Principle
- 5 Apparatus and materials
- 6 Test specimens

1 Scope

This standard sets a method that uses the wet sieving principle to determine the characteristic opening size of geotextiles and geotextile-related products.

This standard applies to all classes of geotextiles and geotextile-related products.

2 Normative references

The following documents are indispensable for the application of this document. For dated references only the edition cited applies; for undated references the latest edition, including all amendments, applies.

GB/T 6003.1 Test sieves - Technical requirements and testing - Part 1: Test sieves of metal wire cloth (GB/T 6003.1-2012, ISO 3310-1:2000, MOD).

GB/T 6003.2 Test sieves - Technical requirements and testing - Part 2: Test sieves of perforated metal plate (GB/T 6003.2-2012, ISO 3310-2:1999, MOD).

GB/T 6005 Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of openings (GB/T 6005-2008, ISO 565:1990, MOD).

GB/T 13760 Geosynthetics - Sampling and preparation of test specimens (GB/T 13760-2009, ISO 9862:2005, IDT).

GB/T 14798 Geosynthetics - Identification on site (GB/T 14798-2008, ISO 10320:1999, IDT).

3 Symbols

The following symbols apply to this document.

3.1 d_n - The particle size below which n % of the particles lie by mass, n being written as a subscript.

3.2 O₉₀ - The opening size of a geotextile or geotextile-related product that lets particles of size d₉₀ pass; that is, the opening size of the geotextile corresponding to the largest soil particle size when 90 % of the soil particles pass through the geotextile. Note: O₉₀ is usually called the characteristic opening size or the effective opening size and is expressed in micrometres (μm).

3.3 C_u - The coefficient of non-uniformity, defined as d₆₀ divided by d₁₀.

4 Principle

A single unstressed layer of the test specimen is used as the sieve mesh. With no external pressure applied and at a prescribed vibration frequency and amplitude, water is sprayed onto the specimen and onto a graded granular material, normally sandy soil, so that the graded granular material passes through the specimen. The characteristic opening size of the specimen is expressed by a specific particle size of the granular material that has passed.

5 Apparatus and materials

5.1 Sieving equipment, made up of the parts below.

5.1.1 Sieving device: the effective sieving area has a diameter of at least 130 mm and meets the following requirements: a) frequency of 50 Hz to 60 Hz, that is a vibration frequency of 3 000 to 3 600 cycles per minute; b) during the test the vertical sieving amplitude of the main vibration is held at 1.5 mm (vibration height 3 mm).

5.1.2 Water supply system.

5.1.3 Nozzle. To wet the specimen evenly and avoid loss of sandy soil or granular material, the nozzle is enclosed in a transparent bucket or under a lid; at a working pressure of 300 kPa the water flow out of the nozzle should be about 0.5 L/min.

5.1.4 Specimen clamping device.

5.1.5 Collecting trough, fixed on the sieving device and joined to the clamping device by a pipe, used to collect the water and the granular material that pass through the specimen. A typical sieving assembly is shown in Figure 1, whose key lists the water supply, the nozzle, the clamping device, the granular material, the specimen, the support grid, the collecting trough, the connecting pipe, the amplitude adjuster, the filter paper and the collecting vessel.

5.1.6 Support grid, woven from wire of 1 mm diameter with a mesh size of (10 ± 1) mm, supporting the specimen during the test so that the mass of the granular material does not deform it excessively.

5.2 Granular material, meeting the following requirements: a) it has to be non-cohesive, that

is the particles must not aggregate in water; if no obvious particle aggregation occurs during the test the result is valid, otherwise the test is repeated; b) the grading must not be interrupted, the particles have to be essentially round, and sharp-edged flaky particles are to be avoided; c) Cu has to lie between 3 and 20 inclusive; d) to improve the accuracy of the determination of the effective opening size, the granular material has to satisfy the condition that O90 lies between d20 and d80 inclusive, the particle size distribution of the graded material and the selection range of O90 being shown in Figure 2, whose axes are the particle diameter in micrometres and the cumulative percentage.

5.3 Filter paper, used to collect the granular material that has passed. If the graded granular material contains a silt fraction, the filter paper should have a maximum pore size of 10 μm .

5.4 Oven, with a controlled temperature of 50 °C to 110 °C.

5.5 Test sieves, meeting the R20 series of sizes of GB/T 6005 (see Annex A).

5.6 Balance, used to weigh the granular material, with a precision of 0.01 g.

5.7 Stopwatch, used for timing, with a precision of ± 1 s.

6 Test specimens

6.1 Handling requirements. The sample must not be folded and the number of times it is handled should be kept to a minimum so that its structure is not affected. The sample is laid on a flat surface and no pressure is applied to it.

6.2 Sampling. Test specimens are taken from the sample as laid down in GB/T 13760.