Australian Standard®

Geotextiles—Methods of test

Method 7: Determination of pore-size distribution—Dry-sieving method

FOREWORD

Because of the importance of pore-size distribution in the design of filters and separators, two test methods are available for measuring the size of openings in geotextiles, viz the dry-sieving method and the wet-sieving method.

In the dry-sieving method, calibrated quartz sand is used to obtain an apparent opening size distribution curve similar to a grain size distribution curve for soils. For large pore sizes, the sand grains may be replaced by glass beads; however, for the measurement of fine pores, the sieving of glass beads could be affected by electrostatic forces and it is not recommended. Difficulties are encountered in the dry sieving of sand through thick non-wovens due to the particles being trapped in the material, but no practical alternative dry methods of determining pore sizes for these types of fabrics are available at the present time.

METHOD

1 SCOPE. This Standard sets out the method for determining the pore-size distribution and apparent opening size (AOS) of a geotextile using the dry sieving method, and, in consequence, the equivalent opening size (EOS)*.

2 APPLICATION. This method is applicable to woven or thin non-woven geotextiles, having an EOS not less than 50 μm.

NOTES:

1. Thicker fabrics or those with finer openings may need to be tested in accordance with AS 3706.8.
2. For fabrics with larger pore sizes, optical methods may be preferable (e.g. over 2 mm, or over 0.6 mm if suitable sand is hard to obtain).

3 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1152 Test sieves

2758 Aggregates and rock for engineering purposes
2758.1 Part 1: Concrete aggregates

3704 Geotextiles—Glossary of terms

3706 Geotextiles—Methods of test
3706.1 Method 1: General requirements, sampling, conditioning, basic physical properties, and statistical analysis
3706.8 Method 8: Determination of pore-size distribution—Wet-sieving method

4 PRINCIPLE. Several fractions of clean quartz sand of known particle size are successively sieved through a screen made of the fabric being tested. A graph of the percentage of sand retained by the fabric against the particle size after 10 min of shaking is plotted, and from this graph, the apparent opening size or equivalent opening size (or both) is determined.

NOTES:

1. Some overseas authorities use glass beads and a shaking time of 20 min. However, because of differences in generation of static electricity and differences in shape, glass beads give different results from natural sand.
2. Some overseas test methods start with the finer and work up to the coarser particle size, but the method described herein appears more practical.
3. Natural quartz sand may be difficult to obtain in all grading sizes required. Variations from pure quartz sand should be noted in the report.

* This method is based on RILEM SM-G-8.1, Dry porometry (woven geotextiles).

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