
Clay geosynthetic barriers — Determination of permeability to gases

Géosynthétiques bentonitiques — Détermination de la perméabilité aux gaz





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Published in Switzerland

Foreword

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ISO 10773 was prepared by Technical Committee ISO/TC 221, *Geosynthetics*.

Clay geosynthetic barriers — Determination of permeability to gases

1 Scope

This International Standard specifies a method for measuring gas flow through a clay geosynthetic barrier.

As clay geosynthetic barriers are used to contain gases in long-term applications, this test especially focuses on the steady state of the phenomenon.

The test is conducted with nitrogen, e.g. N_2 ($\eta = 1,75 \times 10^{-5}$ Pa·s, $\rho = 1,15$ kg/m³ at 20 °C).

The test method and described apparatus allow the measurement of gas flows in the range 0,1 ml/min to 5 l/min on specimens with moisture contents in the range of 90 % to 130 %.

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.

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

3 Principle

Clay geosynthetic barrier specimens are hydrated in a controlled manner before testing. From the plot of gas flow to moisture content under a normal load of 20 kPa and a differential pressure equal to 15 kPa, a gas flow index, $GFI_{110/15}$, is determined, which is the gas flow at 110 % moisture content.

4 Apparatus

4.1 General

The apparatus includes:

- a device allowing to load the specimen at a constant normal stress of 20 kPa (see 4.2);
- a test cell (see 4.3);
- a device to apply inlet pressure in the upstream chamber (in contact with the upper face of the sample) (see 4.4);
- a device for measuring gas flow (see 4.5).

4.2 Loading device

The loading device shall allow the application of the normal stress of 20 kPa with a tolerance of 5 % either by direct loading or with a controlled air supply.