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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDRADS

Draft For Comments Only

भारतीय मानक मसौदा

भूकृत्रिम — पूर्वनिर्मित ऊर्ध्वाधर नालियों के लिए जल स्राव क्षमता के निर्धारण के लिए परीक्षण विधि

Draft Indian Standard

GEOSYNTHETICS — TEST METHOD FOR THE DETERMINATION OF WATER DISCHARGE CAPACITY FOR PREFABRICATED VERTICAL DRAINS

ICS : 59.080.70

Geosynthetics Sectional Committee, TXD 30	Last date for receipt of comments is **23 September 2025**

NATIONAL FOREWORD

(*Formal clauses will be added later*)

This Indian Standard intended to be adopted is identical with ISO 18325 : 2015 'Geosynthetics — Test method for the determination of water discharge capacity for prefabricated vertical drains' issued by the International Organization for Standardization (ISO).

The conditioning temperature of (20 ± 2)°C as specified in International Standard is not suitable for tropical countries like India where the atmospheric temperature is normally much higher than 20 °C. It is almost impossible to maintain this temperature specially during summer when the atmospheric temperature rises even up to 50 °C. In view of the above, IS 6359 : 2023 'Method for conditioning of textiles (first revision)' which specifies a temperature of (27 ± 2) °C for conditioning of the test specimens for the tropical countries like India shall be referred.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In the standard intended to be adopted, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their respective places are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 9862 Geosynthetics — Sampling and preparation of test specimens	IS 14706 : 2024 Geosynthetics — Sampling and preparation of test specimens (*first revision*)	Identical

The technical committee has reviewed the provisions of the following International Standards referred in this standard intended to be adopted and has decided that these are acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 5813	Water quality — Determination of dissolved oxygen — Iodometric method
EN 15237	Execution of special geotechnical works — Vertical drainage

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

EXTRACT OF ISO 18325 : 2015 GEOSYNTHETICS — TEST METHOD FOR THE DETERMINATION OF WATER DISCHARGE CAPACITY FOR PREFABRICATED VERTICAL DRAINS

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 221, *Geosynthetics*.

Introduction

Prefabricated vertical drains (PVDs) are used to accelerate the settlement of soils under a given surcharge loading. Discharge capacity is, therefore, one of the most important properties for PVDs. The discharge capacity decreases gradually due to alteration in shape of core materials under soil pressure and deformation of the geotextile filter into the core structure as time passes.

In highly compressible soils (e.g. peat and gyttja) the relative compression that takes place during the consolidation process, may cause more or less significant buckling of the drains.

In less compressible soils (settlements lower than 20 %), the buckled test is not relevant.

1 Scope

This International Standard specifies a test method for determining the water discharge capacity of prefabricated vertical drains (PVDs), which can be used for conformance and acceptance testing.

This is an index test.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- ISO 5813, *Water quality — Determination of dissolved oxygen — Iodometric method*
- ISO 9862, *Geosynthetics — Sampling and preparation of test specimens*
- EN 15237, *Execution of special geotechnical works — Vertical drainage*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

prefabricated vertical drain

PVD

drainage composite with a rectangular cross-section, with a width of typically 100 mm installed vertically into soil to provide drainage for accelerated consolidation of soils usually consisting of a central core with a channel system surrounded by a filter sleeve or with a filter adhered to it

Note 1 to entry: Other wordings like wick drain, band drain, strip drain are also used.

3.2

confined length

length of the part of the specimen exposed to pressure

3.3

filter length

length of the filter around or on the specimen

3.4

index discharge capacity of a PVD

q_w

volume of water which flows out of the PVD per unit time under a specified hydraulic gradient

Note 1 to entry: It is expressed in ml/s.

3.5

hydraulic gradient

i

ratio of the total head loss across the specimen to the filter length in the flow direction

Note 1 to entry: The filter length would be shorter than the core length and longer than the confined length.

FORMAT FOR SENDING COMMENTS ON BIS DOCUMENTS

(Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub clause/table/fig etc. be started on a fresh box. Information in column 3 should include reasons for the comments and suggestions for modified working of the clauses when

the existing text is found not acceptable. Adherence to this format facilitates Secretariat's work)

Please e-mail your comments to txd@bis.gov.in

NAME OF THE COMMENTATOR/ORGANIZATION:

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Item, Clause Sub-Clause No. Commented upon (Use Separate Box afresh)	**Comments**	**Specific Proposal (Draft clause to be add/amended)**	**Remarks**	**Technical References and justification on which (2), (3), (4) are based**
(1)	**(2)**	**(3)**	**(4)**	**(5)**