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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDRADS

Draft For Comments Only

भारतीय मानक मसौदा

भूवस्त्रादि और भूवस्त्रादि संबंधित उत्पाद — तनन सर्पण एवं सर्पण संविदारण व्यवहार का निर्धारण

(आई एस 14739 : 2021 का *दूसरा पुनरीक्षण)*

Draft Indian Standard

GEOTEXTILES AND GEOTEXTILE-RELATED PRODUCTS — DETERMINATION OF TENSILE CREEP AND CREEP RUPTURE BEHAVIOUR

(Second Revision of IS 14739 : 2021 *)*

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 13431 : 2024 'Geotextiles and geotextile-related products — Determination of tensile creep and creep rupture behaviour' issued by the International Organization for Standardization (ISO).

This standard was originally published in 1999 and was based on BS 6906 Part 5 : 1991 'Methods of test for geotextiles — Part 5: Determination of creep'. The first revision of the standard was brought in 2021. The present revision has been undertaken to align it with the latest version of ISO 13431 : 2024.

The conditioning temperature of (20 ± 2) °C as specified in International Standards 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
ISO 10318-1 : Geosynthetics — Part 1: Terms and definitions	IS 13321 (Part 1) : 2022 Geosynthetics — (Part 1) : Terms and definitions (*first revision*)	Identical
ISO 10319 Geosynthetics — Wide-width tensile test	IS 16635 : 2017 Geosynthetics — Wide - width tensile test	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 554	Standard atmospheres for conditioning and/or testing — Specifications

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 13431 : 2024 'GEOTEXTILES AND GEOTEXTILE-RELATED PRODUCTS — DETERMINATION OF TENSILE CREEP AND CREEP RUPTURE BEHAVIOUR'

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 221, *Geosynthetics,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 189, *Geosynthetics,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 13431:1999), which has been technically revised.

The main changes are as follows:

- — normative references have been updated;
- — units have been added in the Notes to entry in Clause 3;
- — the possibility of other test conditions, upon agreement by parties, have been added in 4.2, 5.3.3, 5.3.5;
- — conditions for lateral contraction have been added in 4.3.3;
- — figure keys have been slightly modified;
- — charts of the recorded temperature and humidity have been added to the test report for the duration of tests in Clause 8.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html

1 Scope

This document specifies a method for determining the tensile creep and creep rupture behaviour of geotextiles and geotextile-related products in an unconfined situation.
Application of this document is limited to products and applications where the risk of collapse of a structure due to premature failure or to strain and time variation of the reinforcement under constant load is of essential importance.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*
- ISO 9862, *Geosynthetics — Sampling and preparation of test specimens*
- ISO 10318-1, *Geosynthetics — Part 1: Terms and definitions*
- ISO 10319, *Geotextiles — Wide-width tensile test*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10318-1 and the following apply.
ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- — ISO Online browsing platform: available at https://www.iso.org/obp
- — IEC Electropedia: available at https://www.electropedia.org/

3.1

tensile strength
maximum load per unit width, developed in a specific material subjected to an external tensile load, when measured in accordance with ISO 10319
Note 1 to entry: Tensile strength is expressed in kilonewtons per metre (kN/m).

3.2

pre-tension force

F_p

tensile force, equal to 1 % of the *tensile strength* (3.1), but not more than 10 % of the *tensile creep load* (3.7), applied to the specimen to enable the gauge length and strain zero to be determined under reproducible conditions
Note 1 to entry: The pre-tension force is expressed in kilonewtons (kN).

3.3

nominal gauge length

initial distance between two reference points located on the specimen parallel to the applied load before the application of the *pre-tension force* (3.2)
Note 1 to entry: The gauge length should be set to be completely clear from the clamping devices. The gauge length should be a representative part of the specimen, e.g. the gauge length for grid structures should be a whole number of meshes or ribs.
Note 2 to entry: Nominal gauge length is expressed in mm.

3.4

technically representative width

TRW

small width that exhibits tensile strength and strain characteristics per unit width, under identical test conditions and within ±5 % of *tensile strength* (3.1) and ±20 % of strain at the maximum load, of the values measured in accordance with ISO 10319
Note 1 to entry: Technically representative width is expressed in millimetres.

3.5

tensile creep strain

time dependent change in tensile strain of a specimen subject to a constant tensile load
Note 1 to entry: Tensile creep strain is expressed as a percentage.

3.6

tensile creep rupture

tensile failure of a specimen subject to a constant tensile load, which is less than the *tensile strength* (3.1)
Note 1 to entry: In some materials, tensile creep rupture is preceded by an increasing rate of strain.

3.7

tensile creep load

constant tensile static load per unit width, applied to the specimen
Note 1 to entry: The tensile creep load is usually expressed as a percentage of the *tensile strength* (3.1) of the sample. The tensile creep load includes the *pre-tension force* (3.2) and, if applicable, any load due to the loading device.
Note 2 to entry: Tensile creep load is expressed in kilonewtons per metre (kN/m).

3.8

loading time

time required to apply the full *tensile creep load* (3.7)
Note 1 to entry: Loading time is expressed in seconds.

3.9

creep time

time elapsed from the end of the *loading time* (3.8)
Note 1 to entry: Creep time is expressed in hours.

3.10

time to tensile creep rupture

time elapsed from the end of the *loading time* (3.8) until *tensile creep rupture* (3.6) of the specimen
Note 1 to entry: Time to tensile creep rupture is expressed in hours.

3.11

lateral contraction

decrease in the width of the specimen during the tensile test, expressed as a percentage of the width of the specimen under *pre-tension force* (3.2), measured at the centre of the gauge length
Note 1 to entry: Lateral contraction is expressed in percentage.
Note 2 to entry: See Figure 2 for an illustration of lateral contraction.

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:

DOCUMENT NO: TXD 30 (28451) WC

BIS LETTER REFERENCE NO. : TXD 30 (28451)

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)