
**Guidelines for the determination of the
long-term strength of geosynthetics for
soil reinforcement**

*Lignes directrices pour la détermination de la résistance à long terme
des géosynthétiques pour le renforcement du sol*



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Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms, definitions, abbreviated terms and symbols.....	1
3.1 Terms and definitions	1
3.2 Abbreviated terms	2
3.3 Symbols	3
4 Design procedure	4
4.1 Introduction	4
4.2 Design lifetime	4
4.3 Causes of degradation	5
4.4 Design temperature	5
5 Determination of long-term (creep) strain.....	5
5.1 Introduction	5
5.2 Extrapolation	6
5.3 Time-temperature superposition methods	6
5.4 Isochronous curves.....	7
5.5 Weathering, chemical and biological effects	8
6 Determination of long-term strength	8
6.1 Tensile strength	8
6.2 Reduction factors	8
6.3 Modes of degradation	8
7 Creep rupture	9
7.1 Introduction	9
7.2 Measurement of creep rupture: conventional method	10
7.3 Curve fitting (conventional method).....	11
7.4 Curve fitting for time-temperature block shifting of rupture curves	12
7.5 Strain shifting and the stepped isothermal method.....	13
7.6 Extrapolation and definition of reduction factor or lifetime.....	15
7.7 Residual strength.....	15
7.8 Reporting of results.....	15
7.9 Procedure in the absence of sufficient data	15
8 Installation damage	16
8.1 General.....	16
8.2 Data recommended.....	16
8.3 Calculation of reduction factor.....	17
8.4 Procedure in the absence of direct data	17
9 Weathering, chemical and biological degradation	19
9.1 Introduction	19
9.2 Data recommended for assessment.....	19
9.3 Weathering	19
9.4 Chemical degradation	20
9.5 Biological degradation	28
10 Determination of long-term strength	28
10.1 Factor of safety f_s	28
10.2 Design for residual strength.....	29
11 Reporting	29
Bibliography	30

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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 20432 was prepared by Technical Committee ISO/TC 221, *Geosynthetics*.

Guidelines for the determination of the long-term strength of geosynthetics for soil reinforcement

1 Scope

This Technical Report provides guidelines for the determination of the long-term strength of geosynthetics for soil reinforcement.

This Technical Report describes a method of deriving reduction factors for geosynthetic soil-reinforcement materials to account for creep and creep rupture, installation damage and weathering, and chemical and biological degradation. It is intended to provide a link between the test data and the codes for construction with reinforced soil.

The geosynthetics covered in this Technical Report include those whose primary purpose is reinforcement, such as geogrids, woven geotextiles and strips, where the reinforcing component is made from polyester (polyethylene terephthalate), polypropylene, high density polyethylene, polyvinyl alcohol, aramids and polyamides 6 and 6.6. This Technical Report does not cover the strength of joints or welds between geosynthetics, nor whether these might be more or less durable than the basic material. Nor does it apply to geomembranes, for example, in landfills. It does not cover the effects of dynamic loading. It does not consider any change in mechanical properties due to soil temperatures below 0 °C, nor the effect of frozen soil. The Technical Report does not cover uncertainty in the design of the reinforced soil structure, nor the human or economic consequences of failure.

Any prediction is not a complete assurance of durability.

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 10318, *Geosynthetics — Terms and definitions*

3 Terms, definitions, abbreviated terms and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10318 and the following apply.

3.1.1

long-term strength

load which, if applied continuously to the geosynthetic during the service lifetime, is predicted to lead to rupture at the end of that lifetime

3.1.2

long-term strain

total strain predicted in the geosynthetic during the service lifetime as a result of the applied load