

ISO/TC 221

Secretariat: BSI

Voting begins on:
2020-03-03

Voting terminates on:
2020-04-28

Geotextiles and geotextile-related products — Determination of index abrasion resistance characteristics under wet conditions for hydraulic applications

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/59b8fbc1-a861-4d8b-8851-93219ad0ac5e/iso-22182-2020>

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.



Reference number
ISO/FDIS 22182:2020(E)

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/59b8bc7-a861-4d8b-8851-93219ad0ac5e/iso-22182-2020>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Principle.....	2
5 Apparatus and materials.....	2
6 Test specimens.....	4
6.1 Handling.....	4
6.2 Sampling.....	4
6.3 Number and dimensions.....	4
6.4 Conditioning.....	4
7 Test procedure.....	5
8 Calculation and expression of results.....	6
9 Test report.....	6
Bibliography.....	8

iTeh STANDARD PREVIEW
 (standards.iteh.ai)
 Full standard:
<https://standards.iteh.ai/catalog/standards/sist/59b88bc7-a861-4d8b-8851-93219ad0ac5e/iso-22182-2020>

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 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*.

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.

Introduction

The abrasion resistance under wet conditions is an important property for the application of geotextiles intended to be used as geobags (geotextile bags filled with soil) or filter beneath armourstone. The abrasion impact on geotextiles can be achieved under wet conditions by installing geotextile samples in a rotating drum. In the fixed rotating drum test facility, the drum is rotated with a defined speed and is filled with water and a mixture of angular-grained high-quality basalt chippings with determined sizes. The abrasion impact is caused by crushed stones tumbling over the geotextile. The assessment of the geotextile abrasion resistance characteristics can be achieved by comparing thickness and mechanical properties (tensile strength, elongation) and/or additional hydraulic properties (characteristic opening size, filtration behaviour) before and after abrasion impact.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/59b8fbc7-a861-4d8b-8851-93219ad0ac5e/iso-22182-2020>

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/59b8bc7-a861-4d8b-8851-93219ad0ac5e/iso-22182-2020>

Geotextiles and geotextile-related products — Determination of index abrasion resistance characteristics under wet conditions for hydraulic applications

1 Scope

This document specifies a test method for determining the abrasion resistance of geotextiles and geotextile-related products under wet conditions. This document is applicable to geotextiles and geotextile-related products intended to be used as e.g. geo bags or filter beneath armourstone.

The test method simulates abrasion impacts on geotextiles and geotextile-related products such as that caused by the movement of rocks in an embankment or transport of sediment in rivers.

This document provides an index test which can be used for performance and acceptance testing. It can be used as performance test by comparison of mechanical and/or additional hydraulic properties before and after abrasion impact.

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 9073-3, *Textiles — Test methods for nonwovens — Part 3: Determination of tensile strength and elongation*

ISO 9862, *Geosynthetics — Sampling and preparation of test specimens*

ISO 9864, *Geosynthetics — Test method for the determination of mass per unit area of geotextiles and geotextile-related products*

ISO 10318-1, *Geosynthetics — Part 1: Terms and definitions*

ISO 10772, *Geotextiles — Test method for the determination of the filtration behaviour of geotextiles under turbulent water flow conditions*

ISO 11058, *Geotextiles and geotextile-related products — Determination of water permeability characteristics normal to the plane, without load*

ISO 12956, *Geotextiles and geotextile-related products — Determination of the characteristic opening size*

EN 1097-1, *Tests for mechanical and physical properties of aggregates — Part 1: Determination of the resistance to wear (micro-Deval)*

EN 1097-6, *Tests for mechanical and physical properties of aggregates — Part 6: Determination of particle density and water absorption*

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 terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1 abrasion resistance ratio

R_A
ratio of the mechanical and/or additional hydraulic properties before and after abrasion impact

3.2 index test

test method which can be used for performance and acceptance testing

Note 1 to entry: It can be used as performance test by comparison of mechanical and/or additional hydraulic properties before and after abrasion impact.

3.3 abrasive material

defined mixture of stone chippings which includes crushed basalt aggregates

4 Principle

The test method simulates abrasion impacts on geotextiles such as that caused by the movement of rocks in an embankment. Abrasive materials and water pass over geotextile specimens installed in a rotating drum for two abrasion phases of 40 000 revolutions each, and thereby the direction of rotation is changed every 5 000 revolutions. The abrasion resistance can be assessed by comparing tensile strength and/or additional hydraulic properties before and after abrasion impact.

NOTE The test principle is also used for the assessment of the abrasion resistance of concrete^[1] and coating systems^[2].

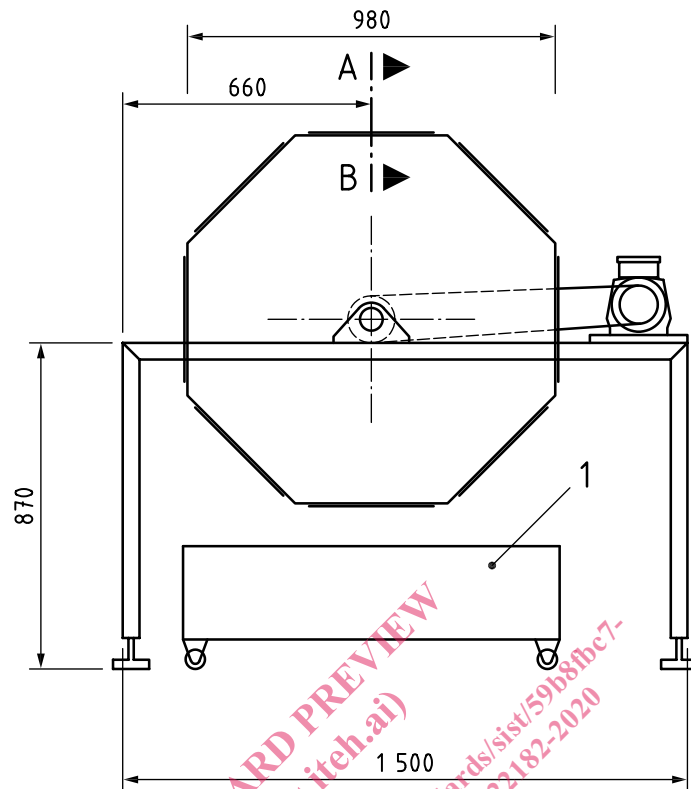
5 Apparatus and materials

5.1 Abrasion drum.

The test apparatus shall comprise an octagonal steel drum with eight test sections driven by a horizontal shaft, an adjustable drive motor, an electronic control system and a test frame. It shall be possible to change the direction of rotation and it shall be possible to set the number of revolutions per minute and the total number of revolutions as required.

NOTE A typical abrasion drum machine is shown in [Figures 1](#) and [2](#).

Dimensions in millimetres

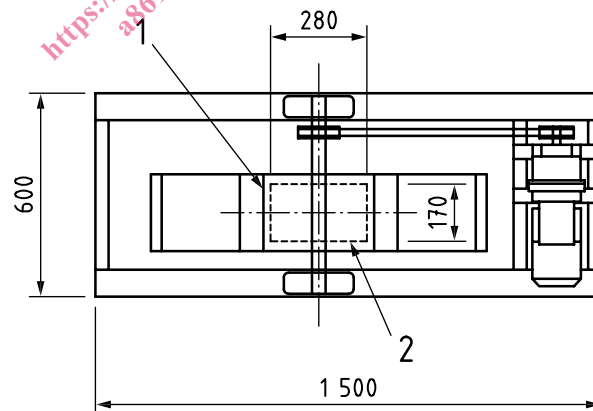
**Key**

- 1 moveable collection container

Figure 1 — Lateral view of the abrasion drum test machine

NOTE For cross section A-B, see [Figure 3](#).

Dimensions in millimetres

**Key**

- 1 geotextile specimen 300 mm × 200 mm
2 test area 280 mm × 170 mm

Figure 2 — Top view of the abrasion drum test machine