Textiles - Yarns from packages - Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 2062:2010 sisaldab Euroopa standardi EN ISO 2062:2009 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 2062:2010 consists of the English text of the European standard EN ISO 2062:2009.
Standard on kinnitatud Eesti Standardikeskuse 28.02.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.12.2009.	Date of Availability of the European standard text 01.12.2009.
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English Version

Textiles - Yarns from packages - Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester (ISO 2062:2009)

Textiles - Fils sur enroulements - Détermination de la force de rupture et de l'allongement à la rupture des fils individuels à l'aide d'un appareil d'essai à vitesse constante d'allongement (ISO 2062:2009)

Textilien - Garne von Aufmachungseinheiten - Bestimmung der Höchstzugkraft und Höchstzugkraftdehnung von Garnabschnitten unter Verwendung eines Prüfgeräts mit konstanter Verformungsgeschwindigkeit (CRE) (ISO 2062:2009)

This European Standard was approved by CEN on 21 November 2009.

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Foreword

This document (EN ISO 2062:2009) has been prepared by Technical Committee ISO/TC 38 "Textiles" in collaboration with Technical Committee CEN/TC 248 “Textiles and textile products” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 2062:2009 has been approved by CEN as a EN ISO 2062:2009 without any modification.

Introduction

In the 1950s and 1960s when this International Standard was first prepared, three types of tensile testers were in wide use: constant rate of specimen extension (CRE), constant rate of travel (CRT) and constant rate of loading (CRL). It was therefore advisable to state the rate of operation in a way which would be common to all three types of tester. In addition, the best possible agreement was sought between the test results of the three types of tester. Consequently, the principle of constant time to break was adopted, and 20 s to break was chosen for this International Standard and also for a number of national standards.

In the early 1990s, CRE testers were recognized as the best type. As CRT and CRL testers were still in use internationally, the procedure for using them was included in an informative annex. There is no assurance that the results from the three types of tester will agree. This International Standard considers CRE testers only, so the time-to-break principle was no longer needed and a simpler statement of rate of extension was used. The rate of extension of 100 % per minute has been adopted as standard, but higher rates were permitted by agreement for automatic testers.

CRT and CRL testers are now considered to be obsolete. The methods of using them are deprecated and their inclusion in informative Annex A does not have an influence on the status of this International Standard.

Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester

1 Scope

1.1 This International Standard specifies methods for the determination of the breaking force and elongation at break of textile yarns taken from packages.

Four methods are given:

— A: manual; specimens are taken directly from conditioned packages;

— B: automatic; specimens are taken directly from conditioned packages;

— C: manual; relaxed test skeins are used after conditioning;

— D: manual; specimens are used after wetting.

1.2 Method C is used in cases of dispute regarding elongation at break of the yarn.

NOTE Methods A, B and C are expected to give the same results for yarn strength, but Method C might give somewhat truer (and higher) values of elongation than A or B. Method D is likely to give results differing, for both breaking force and elongation at break, from those obtained by methods A, B or C.

1.3 This International Standard specifies methods using constant rate of specimen extension (CRE) tensile testers. Testing on the now obsolete constant rate of travel (CRT) and constant rate of loading (CRL) instruments is covered, for information, in Annex A, in recognition of the fact that these instruments are still in use and can be used by agreement.

1.4 This International Standard applies to all types of yarns, except glass, elastomeric, aramid, high molecular polyethylene (HMPE), ultra high molecular polyethylene (UHMPE), ceramic and carbon yarns and polyolefin tape.

NOTE A method for the testing of glass yarns is given in ISO 3341.

1.5 This International Standard is applicable to yarns from packages but can be applied to yarns extracted from fabrics, subject to agreement between the interested parties.

1.6 This International Standard is intended for the single-end (single-strand) testing of yarns.

NOTE The skein method of testing is given in ISO 6939.

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 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 2060, *Textiles — Yarn from packages — Determination of linear density (mass per unit length) by the skein method*

3 Terms and definitions

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

3.1
breaking force
maximum force applied to a specimen in a tensile test carried to rupture

NOTE For yarns, the breaking force or load is preferably expressed in centinewtons.

3.2
elongation at break
increase in length of a specimen corresponding to the breaking force

NOTE For yarns, elongation at break is expressed as a percentage of the initial length.

3.3
breaking tenacity
ratio of a yarn's breaking force to its linear density

NOTE For yarns, breaking tenacity is expressed in centinewtons per tex.

3.4
constant rate of specimen extension (CRE) tester
testing machine in which one end of the specimen is held in a virtually stationary clamp and the other end is gripped in a clamp that is driven at a constant speed

NOTE A suitable system is provided for detecting and recording the force applied and the elongation.

3.5
clamp
that part of a tensile testing machine used to grip the specimen by means of suitable jaws

3.6
jaws
those elements of a clamp which grip the specimen

3.7
gauge length
nominal length
distance between the clamping points of the tester

NOTE With bollard or capstan clamps, it is the distance between their gripping points, measured along the path of the yarn.

3.8
initial length
length of a test specimen (between the clamping points) under specified pretension at the beginning of the test

3.9
package
length of yarn in a form suitable for use, handling, storing, etc.

NOTE Packages can be supported (e.g. cones, bobbins) or unsupported (e.g. skeins, balls).