

**Kaitserõivad. Mehhaanilised omadused.
Katsemeetod materjalide torkekindluse
ja rebenemiskindluse määramiseks (ISO
13995:2000)**

Protective clothing - Mechanical properties - Test
method for the determination of the resistance to
puncture and dynamic tearing of materials

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13995:2001 sisaldab Euroopa standardi EN ISO 13995:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.05.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13995:2001 consists of the English text of the European standard EN ISO 13995:2000.</p> <p>This document is endorsed on 18.05.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala: This European Standard specifies a test method for the determination of the resistance to puncture and dynamic tearing of protective clothing materials which are used in situations where snagging and tearing could result in unacceptable damage to the clothing or danger to the wearer through loss of integrity of a barrier. It is intended that the performance levels determined will be of use in specifying materials for use in situations where the risk of harm is related to the size of puncture and tear that may occur in accidents.</p>	<p>Scope: This European Standard specifies a test method for the determination of the resistance to puncture and dynamic tearing of protective clothing materials which are used in situations where snagging and tearing could result in unacceptable damage to the clothing or danger to the wearer through loss of integrity of a barrier. It is intended that the performance levels determined will be of use in specifying materials for use in situations where the risk of harm is related to the size of puncture and tear that may occur in accidents.</p>
---	---

ICS 13.340.10

Võtmesõnad: mechanical proper, occupational safety, protective clothing, puncture tests, resistance, safety, safety engineering, safety requirements, specification (approval), specifications, tear propagation, tear propagation tests, tear resistance, test furnaces, testing

ICS 13.340.10

English version

Protective clothing – Mechanical properties

Test method for the determination of the resistance to puncture and
dynamic tearing of materials
(ISO 13995 : 2000)

Vêtements de protection – Propriétés
mécaniques – Méthode d'essai pour
la détermination de la résistance à
la perforation et au déchirement
dynamique des matériaux
(ISO 13995 : 2000)

Schutzkleidung – Mechanische Eigen-
schaften – Prüfverfahren zur
Bestimmung des Widerstandes
gegen Durchstoßen und dynamisches
Weiterreißen von Materialien
(ISO 13995 : 2000)

This European Standard was approved by CEN on 2000-04-08.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Management Centre: rue de Stassart 36, B-1050 Brussels

Contents

Foreword.....	3
Introduction	3
1 Scope	4
2 Terms and definitions.....	4
2.1 Test specimen mounting block	4
2.2 Tearing blade.....	4
3 Requirements	4
3.1 Use of this standard	4
4 Test apparatus and procedures	5
4.1 Principle of the puncture and dynamic tear test	5
4.2 Types of tear and their measurement.....	5
4.3 Performance levels	6
4.4 Test apparatus	6
4.5 Falling mass - blade holding block	6
4.6 The tearing blade	6
4.7 The test specimen mounting block and clamps.....	7
4.7.1 Dimensions of the test specimen mounting block.....	7
4.7.2 The test specimen clamping system.....	7
4.8 Preparing the apparatus.....	7
4.9 Preparation of test specimens.....	7
4.10 Mounting the test specimens	8
4.11 Carrying out a test	8
4.12 Classification of results	9
4.13 Test report	9
Annex A (informative) Informative annex on the specification of puncture and dynamic tear tests on materials and clothing.....	10
A.1 Introduction	10
A.2 Scope	10
A.3 Use of this European Standard	10
A.4 Hazard identification - choice of test method.....	10
A.4.1 Puncture and propagating tear.....	10
A.4.2 Puncture.....	10
A.4.3 Impact cut, stab.....	11
A.4.4 Sliding cut.....	11
A.4.5 Impact abrasion	11
A.4.6 Shearing, puncturing and tear.....	11
A.4.7 Tearing or bursting	11
A.4.8 Summary of test method choice	11
A.5 Risk analysis	12
A.5.1 Threat identification and quantification	12
A.5.2 Estimation of potential harm	13
A.5.3 Risk level estimation	13
A.6 Performance criteria.....	14
A.7 Specification of performance levels	14
A.8 Special conditions and deviation from the method in this European Standard	14
A.8.1 Area of hole or tear length	15
A.8.2 Pre-conditioning	15
A.8.3 Special test conditions.....	15

Foreword

The text of EN ISO 13995:2000 has been prepared by Technical Committee CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 94 "Personal safety - Protective clothing and equipment".

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 2001, and conflicting national standards shall be withdrawn at the latest by June 2001.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Standard test method is based on ASTM D 2582-90, "Standard test method for puncture-propagation tear resistance of plastic film and thin sheeting". The test has been modified to make it applicable to strong woven and knitted fabrics, coated fabrics and leather. The test is designed to assess the resistance to snagging and tearing of materials used for protective clothing. It is important to know the puncture and dynamic tear resistance of material used for protective clothing that is intended to be used in hazardous situations where the clothing forms a barrier between the wearer and the hazard, and breaching of the barrier can result in harm and the level of risk of harm is related to the size of hole resulting from the puncture and tear. Such clothing includes chemical and biological barrier clothing, spray suits, foul weather clothing and firefighting clothing.

Dynamic tearing of materials following puncture by a spike is a complex process. The test given in this European Standard has been devised to provide standard conditions under which materials can be compared. Experience with materials of known resistance will enable product standards writers and clothing designers to specify appropriate performance levels for particular end-uses. The standard provides for four performance levels.

It has been assumed in the drafting of this European Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people, for whose guidance it has been prepared. The apparatus described should only be used by competent persons and requires safeguards to prevent, as far as is reasonably practicable, injury to the operator and other persons.

1 Scope

This European Standard specifies a test method for the determination of the resistance to puncture and dynamic tearing of protective clothing materials which are used in situations where snagging and tearing could result in unacceptable damage to the clothing or danger to the wearer through loss of integrity of a barrier. It is intended that the performance levels determined will be of use in specifying materials for use in situations where the risk of harm is related to the size of puncture and tear that may occur in accidents.

2 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply:

2.1 Test specimen mounting block

A solid block of metal or plastic to which the test specimen is clamped for testing.

2.2 Tearing blade

A blunt blade projecting from the falling mass which punctures and tears the test specimen.

NOTE: The hard steel tearing blade has a ground wedge shaped end that has a radius of curvature so that it is not sharp, but will puncture test materials. The main body of the blade is 3 mm thick and the lower surface is half round. This lower surface causes the blunt tear in the test specimen that is measured in the test. This blade performs the same function as the spike in ASTM D 2582-90, but it is more rigid so is capable of withstanding greater forces.

3 Requirements

3.1 Use of this standard

This European Standard describes a method for determining the resistance to puncture and dynamic tearing of materials. When it is cited as a test method in a specific product standard that standard shall contain the necessary information to permit the application of this European Standard to the particular products. The standard citing this European Standard shall include at least the following:

- a) Normative reference to this European Standard;
- b) A description of the samples to be tested, their origin in sheet materials or finished PPE (Personal Protective Equipment) products, their method of preparation and pre-treatment, if any, and the permitted size range of the samples;
- c) Details of any additions to, or deviations from the method described in this European Standard;
 - Details of any specific clamping and stretching methods to be used with the test specimens ;
 - The energy(s) and velocity(s) of impacts to be used in the test;
 - The orientation of the impacts relative to a specified axis of the test specimens ;
 - The number of tests to be performed;
 - Details of any specific techniques to be used in measuring tear lengths in particular materials or in materials for particular applications;
- d) Additional contents of the test report to be provided: