



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN ISO 13995:2000

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

Vêtements de protection - Propriétés
mécaniques - Méthode d'essai pour la
détermination de la résistance à la
perforation et au dynamique des

Schutzkleidung - Mechanische
Eigenschaften - Prüfverfahren zur
Bestimmung des Widerstandes gegen
Durchstoßen und dynamisches

12/2000



National Foreword

This European Standard EN ISO 13995:2000 was adopted as Luxembourgish Standard ILNAS-EN ISO 13995:2000.

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ILNAS-EN ISO 13995:2000

EUROPEAN STANDARD **EN ISO 13995**
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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 dynamique des matériaux (ISO
13995:2000)

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

This European Standard was approved by CEN on 8 April 2000.

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.

This European Standard exists 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

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:

- The performance requirements for the product, and associated "levels". The performance required shall be given as either a performance level as defined in this European Standard, or as "a mean tear length not more than xx mm and a largest single value of not more than yy mm when tested according to zz";
- The area of the product that is to meet the requirements.

Information and guidance on using this European Standard in a product standard are given in the informative Annex A.