

**Skyddskläder för användning mot fasta partiklar –**  
Del 1: Fodringar på prestanda för skyddskläder  
mot kemikalier som ger skydd för hela kroppen  
mot luftburna fasta partiklar (Skyddskläder Typ 5)  
(ISO 13982-1:2004)

**Protective clothing for use against solid  
particulates –**  
Part 1: Performance requirements for chemical  
protective clothing providing protection to the full  
body against airborne solid particulates  
(type 5 clothing) (ISO 13982-1:2004)

Europastandarden EN ISO 13982-1:2004 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 13982-1:2004.

The European Standard EN ISO 13982-1:2004 has the status of a Swedish Standard. This document contains the official English version of EN ISO 13982-1:2004.

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Protective clothing for use against solid particulates - Part 1:  
Performance requirements for chemical protective clothing  
providing protection to the full body against airborne solid  
particulates (type 5 clothing) (ISO 13982-1:2004)

Vêtements de protection à utiliser contre les particules solides - Partie 1: Exigences de performance des vêtements de protection contre les produits chimiques offrant une protection au corps entier contre les particules solides transportées par l'air (vêtements de type 5) (ISO 13982-1:2004)

Schutzkleidung gegen Teilchen fester Chemikalien - Teil 1: Leistungsanforderungen an Chemikalienschutzkleidung, die für den gesamten Körper einen Schutz gegen schwebende Teilchen fester Chemikalien gewähren (Kleidung Typ 5) (ISO 13982-1:2004)

This European Standard was approved by CEN on 12 November 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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## Foreword

This document (EN ISO 13982-1:2004) 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 May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document 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 document.

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

## Introduction

It is necessary to determine the suitability of type 5 clothing for each specific chemical substance and its acceptable exposure limits in relation to the inward leakage of the type 5 garment. Hence, it is possible, that this type of clothing does not offer adequate protection from aerosols of highly hazardous substances, where a type 1 garment might be necessary to obtain the level of protection needed.

# Protective clothing for use against solid particulates —

## Part 1:

# Performance requirements for chemical protective clothing providing protection to the full body against airborne solid particulates (type 5 clothing)

## 1 Scope

This part of ISO 13982 specifies the minimum requirements for chemical protective clothing resistant to penetration by airborne solid particles (type 5). These garments are full-body protective clothing, i.e. covering trunk, arms and legs, such as one-piece coveralls or two piece suits, with or without hood or visors, with or without foot protection. Requirements for component parts, such as hoods, gloves, boots, visors or respiratory protective equipment might be specified in other International and European Standards.

This part of ISO 13982 is applicable only to airborne solid particulates. It is not applicable to other forms of challenge by solid chemicals, e.g. penetration of chemical dust through materials by rubbing or flexing, which may form the object of separate standards.

## 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 3758, *Textiles — Care labelling code using symbols*

ISO/TR 11610, *Protective clothing — Vocabulary*

ISO 13982-2:—<sup>1)</sup>, *Protective clothing for use against solid particulates — Part 2: Test method for determination of inward leakage of aerosols of fine particles into suits*

EN 340:2003, *Protective clothing — General requirements*

EN 12941:1998, *Respiratory protective devices — Powered filtering devices incorporating a helmet or a hood — Requirements, testing, marking*

EN 14325:2004, *Protective clothing against chemicals — Test methods and performance classification of chemical protective clothing materials, seams, joins and assemblages*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 11610 apply.

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1) To be published.

## 4 Performance requirements

### 4.1 Materials

Chemical protective clothing materials for type 5 clothing shall be tested and classified in accordance with the provisions of EN 14325:2004 for the following properties:

- abrasion resistance (4.4);
- flex cracking resistance (4.5);
- trapezoidal tear resistance (4.7);
- puncture resistance (4.10).

The materials shall also meet the requirement for resistance to ignition (EN 14325:2004, 4.14).

These requirements also apply to additional protective items, e.g. hood or overboots, if they constitute an integral part of the garment.

All samples shall undergo five cycles of cleaning according to the manufacturer's instructions before testing, if the manufacturer's instructions indicate that the garment can be cleaned.

All test specimens shall be conditioned by storage at  $(20 \pm 2)$  °C and  $(65 \pm 5)$  % relative humidity for at least 24 h. Unless otherwise indicated in the test procedure, tests shall start within 5 min of removing the test specimens from the conditioning atmosphere.

When classified in accordance with EN 14325, chemical protective clothing materials shall obtain at least a performance level 1 for each of the properties quoted. If a test method fails to provide a clearly measurable result, the words "not applicable" shall be marked in the instructions for use and in the test report with regards to the corresponding property. The reason why the test could not be completed properly shall also be indicated, e.g. if the elasticity of the specimen prevents reaching a measurable end-point in the puncture resistance test.

Materials which are known to cause skin irritation or to have any adverse effects on health shall not be used (see also EN 340:2003, 4.2).

The material of construction should be as light and as flexible as possible in order to ensure wearer comfort as well as providing effective protection.

**NOTE** Material properties are only one element for the determination of wearer comfort of protective clothing. Design features of the clothing can have an important influence on wearer comfort.

### 4.2 Seams, joins and assemblages

#### 4.2.1 General

Seams shall be constructed to minimize or prevent penetration of solid particles through stitch holes or through other components of a seam. The performance of the garment may be different from that of the material from which it is made, but shall be adequate for the intended use.

No specific testing of specimens containing seams, joins and assemblages is required with regards to the penetration of solid airborne particles, as this is verified in the whole-suit test (see 4.3).

**NOTE** The requirements of this clause apply to the garment as a whole, including component parts, such as gloves or boots, that are integral to the garment. The seams, joins and assemblages attaching these accessories are included within the scope of this part of ISO 13982. The performance criteria for the accessories, gloves, boots or RPE are given in other International and European Standards.