SLOVENSKI STANDARD

SIST EN 943-2:2002

01-junij-2002

Varovalna obleka pred tekoļ imi in plinskimi kemikalijami, vkljuļ no s tekoļ imi aerosoli in trdnimi delci - 2. del: Varnostne zahteve za kemijsko varovalno obleko, ñneprepustno za plinò (tip 1), za reģevalne ekipe

Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles - Part 2: Performance requirements for "gas-tight" (Type 1) chemical protective suits for emergency teams (ET)

Schutzkleidung gegen flüssige und gasförmige Chemikalien, einschließlich Flüssigkeitsaerosole und feste Partikel - Teil 2: Leistungsanforderungen für "gasdichte" (Typ 1) Chemikalienschutzanzüge für Notfallteams

Vetements de protection contre les produits chimiques liquides et gazeux, y compris les aérosols liquides et les particules solides - Partie 2: Exigences de performance des combinaisons de protection chimique étanches aux gaz (Type 1) destinées aux équipes de secours (ET)

Ta slovenski standard je istoveten z: **EN 943-2:2002**

ICS:

13.340.10	Varovalna obleka	Protective clothing

SIST EN 943-2:2002 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 943-2

January 2002

ICS 13.340.10

English version

Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles - Part 2: Performance requirements for “gas-tight” (Type 1) chemical protective suits for emergency teams (ET)

Vêtements de protection contre les produits chimiques liquides et gazeux, y compris les aérosols liquides et les particules solides - Partie 2: Exigences de performance des combinaisons de protection chimique étanches aux gaz (Type 1) destinées aux équipes de secours (ET)

Schutzkleidung gegen flüssige und gasförmige Chemikalien, einschließlich Flüssigkeitsaerosole und feste Partikel - Teil 2: Leistungsanforderungen für “gasdichte” (Typ 1) Chemikalienschutzanzüge für Notfallteams

This European Standard was approved by CEN on 28 December 2001.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. EN 943-2:2002 E

Contents

Foreword

This European Standard 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.

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 July 2002, and conflicting national standards shall be withdrawn at the latest by July 2002.

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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the minimum requirements for the chemical protective suits for use by emergency teams (ET), including component parts such as gloves and boots which may be specified elsewhere.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 345-2:1996, *Safety footwear for professional use – Part 2: Additional specifications.*

EN 374-1, *Protective gloves against chemicals and micro-organisms – Part 1: Terminology and performance requirements.*

EN 374-3, *Protective gloves against chemicals and micro-organisms — Part 3: Determination of resistance to permeation by chemicals.*

prEN 943-1:2002, *Protective clothing against liquid and gaseous chemicals, including liquid aerosols and solid particles- Performance requirements for ventilated and non-ventilated "gas-tight" (Type 1) and "non-gas-tight" (Type 2) chemical protective suits.*

prEN ISO 11610, *Protective clothing – Glossary of terms and definitions (ISO/DIS 11610:1997).*

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in prEN ISO 11610 together with the following apply.

3.1
type 1a-ET - “gas-tight” chemical protective suit
gas-tight chemical protective suit for use by emergency teams with breathable air supply independent of the ambient atmosphere, e.g. a self contained open-circuit compressed air breathing apparatus, worn inside the chemical protective suit

3.2
type 1b-ET - “gas-tight” chemical protective suit
gas-tight chemical protective suit for use by emergency teams with a breathable air supply, e.g. a self contained open-circuit compressed air breathing apparatus, worn outside the chemical protective suit

As chemical protection is used with respiratory devices, special attention shall be given to the adequate selection of respiratory protective equipment. The limiting factors for the use of filters (e.g. oxygen deficiency) shall be taken into consideration.

3.3
attachment point
fixing to the outside of the chemical protective suit to enable equipment required to be fitted, e.g. a torch

4 General

The chemical protective suits type 1a-ET and type 1b-ET shall fulfil the requirements of prEN 943-1. Beyond that the additional or restrictive requirements of this European Standard shall be fulfilled. The performance class requirements given below are the minimum performance requirements.

NOTE 1 The mechanical performance requirements for component parts such as gloves, safety footwear etc. are specified in other relevant EN's.

NOTE 2 As these chemical protective suits are intended for use in emergency situations it is recommended that the use of a “pass-thru” on type 1a-ET suits is considered, even though this is an optional requirement.

5 Performance requirements of chemical protective clothing materials

5.1 General

The chemical protective clothing shall meet the requirements given in Table 1, when tested in preconditioned condition against the appropriate clause of prEN 943-1.

NOTE Because limited-use protective clothing is not intended to be used repeatedly the performance requirements required to demonstrate the durability of the protective clothing material are different to those for materials intended for repeated use. As a consequence, abrasion resistance and flex cracking resistance performance levels are specified differently for limited-use and re-usable chemical protective clothing materials.

Table 1 — Minimum performance requirements of chemical protective clothing materials

Property	Testing reference	Performance class Limited-use suits	Performance class Re-usable suits
Abrasion resistance	prEN 943-1	Class 4	Class 6
Flex cracking resistance	prEN 943-1	Class 1	Class 4
Flex cracking resistance at low temperatures (-30°C)	prEN 943-1	Class 2	Class 2
Trapezoidal tear resistance	prEN 943-1	Class 3	Class 3
Tensile Strength	prEN 943-1	Class 4	Class 6
Puncture resistance	prEN 943-1	Class 2	Class 3
Resistance to flame	prEN 943-1	Class 1	Class 3

If only Class 2 is achieved for Puncture resistance the instructions for use shall identify that the chemical protective clothing may not be suitable for use where there is a high risk of puncture.

5.2 Resistance to permeation by chemicals of chemical protective clothing material, safety footwear, gloves and visor (if fitted)

The chemical protective clothing material, safety footwear, gloves and visor if fitted, shall be tested for resistance to permeation against the following liquid and gaseous standard test chemicals given in Table 2:

Table 2 — Chemicals for permeation tests

	Physical state	Generic representation
1) Dichloromethane	liquid	Chlorinated hydrocarbon
2) Methanol	liquid	Primary alcohol
3) n-Heptane	liquid	Saturated hydrocarbon
4) Toluene	liquid	Aromatic hydrocarbon
5) Diethylamine	liquid	Amine
6) Sodium Hydroxide 40%	liquid	Inorganic base
7) Sulphuric Acid 96%	liquid	Inorganic mineral acid
8) Ammonia	gas	Basic gas
9) Chlorine	gas	Halogen gas
10) Hydrogen Chloride	gas	Inorganic acid gas
11) Acetone	liquid	Ketone
12) Acetonitrile	liquid	Nitrile compound
13) Ethyl Acetate	liquid	Ester
14) Carbon Disulphide	liquid	Sulphur containing organic compound
15) Tetrahydrofuran	liquid	Heterocyclic and ether compound

When tested according to annex B of prEN 943-1:2002 the class for each of the chemicals in the test battery shall be identified in the instructions for use. If class 2 is not achieved for any material or component part tested the instructions for use shall identify that this chemical protective suit is not suitable for use for this chemical under continuous exposure.

For safety footwear the test specimen shall be taken from the thinnest point of the footwear above the join to the sole.

NOTE The test chemicals identified above have been selected to represent a range of aggressive chemicals so as to ensure that chemical protective suit which meets the requirements of this European Standard will offer protection against a wide range of chemicals (Classes and Properties). However, it should be recognised that this approach only provides basic guidance against groups represented by these chemicals and that the performance against chemicals other than those listed can only be determined by individual tests.

5.3 Protective gloves and safety footwear

5.3.1 Protective gloves

Protective gloves shall also meet the requirements of EN 374-1.

NOTE As EN 374-1 has only very limited mechanical and thermal requirements it may be necessary to use an over-glove e.g. according to EN 659 to provide greater mechanical and thermal protection.

5.3.2 Safety footwear

Where safety footwear is fitted it shall also meet the requirements of clause 7 of EN 345-2:1996 (Type FPA).

Where safety footwear is not permanently fitted to the chemical protective suit any external bootee supplied by the manufacturer shall comply with the requirements of clause 7 of EN 345-2:1996 (Type FPA).

An integral sock or bootee shall provide at least the same level of protection as the fabric from which the chemical protective suit is manufactured.

5.4 Visor

The visor shall meet the requirements of 5.5 of prEN 943-1:2002 as well as the requirements given below.

When tested in accordance with 8.2 the visor shall pass for each chemical listed in 5.2. This test shall only be carried out with those test chemicals for which the test according to 5.2 has led to any indication of harm to the visibility.

6 Performance requirements for seams, joins and assemblages

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 European Standard. The performance criteria for the accessories (gloves, boots or RPE) are given in other European Standards.

6.1 Resistance to permeation of closures by chemicals

Closures or closure assemblies shall be tested in accordance with 5.2 for each chemical listed in Table 2. The breakthrough time shall be at least 5 min for each chemical.

The test cell according to EN 374-3 has to be modified for testing of closures to ensure that the sample can be fitted tightly into the cell.

If the closure or closure assembly fails to meet level 2 the closure or closure assembly shall be protected by a flap or cover to reduce the risk of liquid chemical contact.

6.2 Resistance to permeation of seams by chemicals

Seams shall be tested and classified in the same way as materials in accordance with 5.2, and the performance classification ratings shall be reported in the instruction for use of 8 d) of prEN 943-1:2002 in the same way as for chemical protective clothing materials.

If a seam or closure is rated only class 1 for a chemical listed in Table 2 the instructions for use shall indicate that the chemical protective suit is not suitable for use against this chemical under continuous exposure.

6.3 Seam strength

The seam strength of the chemical protective suit shall fulfil the requirements of class 5 of B.3.5 of prEN 943-1:2002.

6.4 Attachment points

Where an attachment point for a lifeline is fitted it shall withstand a pull of not less than 1 000 N.

The attachment point for other items of equipment shall withstand a pull of not less than 250 N.