SLOVENSKI STANDARD
SIST EN 14225-3:2018

01-februar-2018

Nadomešča:
SIST EN 14225-3:2005

Potapljaške obleke - 3. del: Obleke s sistemi za aktivno ogrevanje ali hlajenje in njihovi deli - Zahteve in preskusne metode

Diving suits - Part 3: Actively heated or cooled suit systems and components - Requirements and test methods

Tauchanzüge - Teil 3: Aktiv beheizte oder gekühlte Anzugssysteme und Anzugsteile - Anforderungen und Prüfverfahren

Vêtements de plongée - Partie 3: Vêtements avec système de chauffage ou de refroidissement actif - Exigences et méthodes d'essai

Ta slovenski standard je istoveten z: **EN 14225-3:2017**

ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment

SIST EN 14225-3:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14225-3

December 2017

ICS 97.220.40

Supersedes EN 14225-3:2005

English Version

Diving suits - Part 3: Actively heated or cooled suit systems and components - Requirements and test methods

Vêtements de plongée - Vêtements avec système de chauffage ou de refroidissement actif et composants - Partie 3 : Exigences et méthodes d'essai

Tauchanzüge - Teil 3: Aktiv beheizte oder gekühlte Anzugssysteme und Anzugsteile - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 7 June 2017.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 14225-3:2017 E

Contents

Page

European foreword

This document (EN 14225-3:2017) 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 June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

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

This document supersedes EN 14225-3:2005.

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 Regulation (EU) 2016/425.

For relationship with Regulation (EU) 2016/425, see informative Annexes ZA and ZB, which are an integral part of this document.

Annex B provides details of significant technical changes between this European Standard and the previous edition.

EN 14225 consists of the following parts, under the general title *Diving suits*:

— *Part 1: Wet suits — Requirements and test methods*;

— *Part 2: Dry suits — Requirements and test methods*;

— *Part 3: Actively heated or cooled suit systems and components — Requirements and test methods*.

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

Introduction

This document for actively heated or cooled diving suits systems and components has been prepared to meet the needs of persons engaged in underwater activities where the user is breathing underwater, and where the water temperature and exposure duration are such that the person's thermal status only can be maintained at a safe level by means of active heating or cooling.

Actively heated suits and actively cooled suits are designed to reduce the risk of the diver suffering hypothermia and hyperthermia, respectively.

The performance of the suit can be altered by a number of factors including any additional equipment carried by the diver.

A suit may be comprised of one or more pieces.

1 Scope

This European Standard specifies the construction and performance of actively heated suits and actively cooled suits or components thereof, for wear by divers for underwater activities where the user is breathing underwater. Marking, labelling, information meant to be provided at the point of sale and instructions for use are also specified.

Laboratory and practical performance tests are specified.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 250, *Respiratory equipment — Open-circuit self-contained compressed air diving apparatus — Requirements, testing and marking*

EN 1809:2014+A1:2016, *Diving equipment — Buoyancy compensators — Functional and safety requirements, test methods*

EN 14126:2003, *Protective clothing — Performance requirements and tests methods for protective clothing against infective agents*

EN 14225-1:2017, *Diving suits — Part 1: Wet suits — Requirements and test methods*

EN 14225-2:2017, *Diving suits — Part 2: Dry suits — Requirements and test methods*

EN 16523-1, *Determination of material resistance to permeation by chemicals — Part 1: Permeation by liquid chemical under conditions of continuous contact*

EN ISO 3758, *Textiles — Care labelling code using symbols (ISO 3758)*

EN ISO 13934-1, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method (ISO 13934-1)*

EN ISO 15027-3:2012, *Immersion suits — Part 3: Test methods (ISO 15027-3:2012)*

ISO 1817:2015, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

IMCA D 045[1)], *Code of practice for the safe use of electricity under water (October 2010)*

3 Terms and definitions

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

1) https://www.imca-int.com/login/?download=/publication/295/code-of-practice-for-the-safe-use-of-electricity-under-water.pdf.

3.1
actively heated suit
suit designated to provide heat to the layer of gas or water between the suit and the diver's body

3.2
actively cooled suit
suit designated to remove heat from the layer of gas or water between the suit and the diver's body

3.3
attachment
item attached to the diving suit

3.4
component
part of a suit system

3.5
connector
connecting device between the suit's internal distribution system and an external supply unit

3.6
diving environment
environment in which the wearer of a diving suit engages in diving activities

3.7
diving suit
suit designed for intended underwater activities, in which the user is breathing underwater

3.8
dry suit
diving suit, which covers all or particular regions of the body and which is designed to prevent the ingress of water upon immersion

3.9
heat stress
physiological stress produced by the heat load on the body

Note 1 to entry: The total heat load is made up of the metabolic heat load and environmental heat loads including that due to clothing.

3.10
hyperthermia
condition of the human body in which the core temperature is above 39 °C

3.11
hypothermia
condition of the human body in which the core temperature is below 35 °C

3.12
single action release mechanism
mechanism, which can be released with one hand

3.13
suit system
combination of diving suit components, undergarments and attachments

3.14
umbilical
hose or cable system for transferring energy and other services to or from an actively heated or actively cooled suit

3.15
undergarment
garment worn under the diving suit to provide one or more of insulation mechanical protection or thermal control

3.16
wet suit
diving suit, made of thermal insulating material, which covers all or part of the body and that is designed to reduce the flow of the water around the diver's body

4 Requirements

4.1 General

Actively heated and/or cooled suit systems and components shall conform to all the relevant requirements of EN 14225-1 or EN 14225-2 and to the requirements listed in Table 1, as applicable. Actively heated and/or cooled suit systems and components incorporating optional features shall also conform to the requirements listed in Table 2, as applicable.

The requirements are for both types of suits (wet and dry) unless otherwise specified.

Table 1 — Actively heated or cooled suit systems and components — Overall requirements

Requirement	Requirement specified in clause	Test method
Whole suit		
Sizing	4.6.1	5.5.7.3 b)
Resistance to hot and cold storage	4.3.1	5.4.2.1
Sea water resistance	4.3.2	5.4.2.2
Resistance to cleaning, disinfection and decontamination	4.3.3	5.4.2.3
Practical performance	4.9	5.5
Control systems for heating/cooling	4.6.2	5.5
Internal volume control system	4.6.3	5.5 and EN 14225–2:2017, 5.5.1
Connectors	4.6.4	5.4.4.2 and other relevant tests
Penetration	4.6.5	EN 14225–2:2017, 5.4.3.5
Provision for urination	4.6.6	5.5 and 5.3
Leakage resistance of dry suits	4.6.7	5.4.3
Thermal requirements	4.7	5.3, 5.5 and 5.5.7.5 or 5.5.7.6
Safety requirements for electrical systems	4.8	IMCA D 045
Suit materials		
Resistance to puncture and dynamic tearing	4.4	EN 14225–2:2017, 5.4.3.1
Seam strength	4.4.2	5.3 and EN 14225–2:2017, 5.4.3.2
Strength of closures	4.4.3	EN 14225–2:2017, 5.4.3.3
Joint strength of attachments	4.4.4	EN 14225–2:2017, 5.4.3.4
Integrity of slide fasteners	4.4.5	EN 14225–2:2017, 5.5.2
Mechanical performance of underwear material	4.5	5.3 and EN ISO 13934-1
Marking and Information		
Marking	Clause 6	5.3
Information to be supplied by manufacturer	Clause 7	5.3

Table 2 — Actively heated or cooled suit systems with special protection and other optional features

Feature	Requirement specified in clause	Test method	Symbol
Resistance against chemicals	4.10.1	EN 14225–2:2017, 4.6.2.2	HZ
Resistance against biological hazards	4.10.2	EN 14225–2:2017, 4.6.2.3	BIO
Resistance against abrasion	4.10.3	EN 14225–2:2017, 4.6.2.4	ABR
Suits to aid visibility	4.10.4	EN 14225–2:2017, 4.6.2.5	VIS

4.2 Categories

An actively heated system shall conform to one of the requirements in Table 3.

Table 3 — Categorization of actively heated suit systems

Category	Time of use	Lower water temperature limit
A	4 h	4 °C
B	1 h	4 °C
C	4 h	10 °C
D	1 h	10 °C

Testing shall be performed in accordance with 5.5.7.5.

4.3 Mechanical performance

4.3.1 Resistance to cold and hot storage

Applicable only for dry suits:

Dry suit systems and components shall comply with the requirements specified in EN 14225-2:2017, 4.2.1. Testing shall be performed in accordance with 5.4.2.1 (in this part).

Applicable only for wet suits:

Wet suit systems and components shall comply with the requirements specified in EN 14225-1:2017, 4.1.1. Testing shall be performed in accordance with 5.4.2.1 (in this part).

4.3.2 Sea water resistance

Any material that is intended to come in to contact with seawater shall be seawater resistant. Testing shall be performed in accordance with 5.4.2.2 and then visually inspected after each cycle in accordance with 5.3 (in this part).