

SUKELDUMISÜLIKONNAD. OSA 3:
SUKELDUMISÜLIKONDADE SÜSTEEMID JA NENDE
OSAD. NÕUDED JA KATSEMEETODID

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14225-3:2017 sisaldab Euroopa standardi EN 14225-3:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 14225-3:2017 consists of the English text of the European standard EN 14225-3:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 06.12.2017.	Date of Availability of the European standard is 06.12.2017.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 97.220.40

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autoriõiguse kaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about standards copyright protection, please contact the Estonian Centre for Standardisation and Accreditation: Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

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

Contents

Page

European foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Requirements	8
4.1 General.....	8
4.2 Categories	10
4.3 Mechanical performance.....	10
4.3.1 Resistance to cold and hot storage	10
4.3.2 Sea water resistance	10
4.3.3 Resistance to cleaning, disinfection and decontamination	11
4.4 Mechanical performance of the material, seams and attachments	11
4.4.1 Resistance of material to puncture and dynamic tearing	11
4.4.2 Strength of suit seams	11
4.4.3 Strength of closures.....	11
4.4.4 Joint strength of attachments	11
4.4.5 Integrity of slide fasteners.....	11
4.5 Underwear.....	11
4.6 Construction.....	11
4.6.1 Sizing.....	11
4.6.2 Control systems for heating or cooling	11
4.6.3 Internal volume control system.....	12
4.6.4 Connectors.....	12
4.6.5 Suit penetration	12
4.6.6 Provision for urination	12
4.6.7 Leakage resistance of dry suits	12
4.7 Thermal requirements.....	12
4.8 Special safety requirements for electrical systems.....	13
4.9 Practical performance requirements	13
4.10 Optional features.....	14
4.10.1 Resistance against chemicals.....	14
4.10.2 Resistance against biological hazards	14
4.10.3 Resistance against abrasion.....	14
4.10.4 Visibility.....	14
5 Test methods	14
5.1 General.....	14
5.2 Test sequence	14
5.3 Visual inspection	16
5.4 Mechanical tests methods.....	17
5.4.1 General.....	17
5.4.2 Preliminary tests.....	17
5.4.3 Mechanical tests — Leakage test for dry suits.....	17
5.4.4 Testing of suit components.....	18

5.5	Practical performance test.....	18
5.5.1	General	18
5.5.2	Sampling	18
5.5.3	Test panel	18
5.5.4	Test divers.....	18
5.5.5	Test clothing	19
5.5.6	Diving equipment	19
5.5.7	Test procedure	19
5.5.8	Pass / fail criteria	22
5.6	Testing optional features.....	23
5.6.1	Chemical resistance	23
5.6.2	Resistance against biological hazards.....	23
5.6.3	Abrasion test	23
5.6.4	Visibility	23
6	Marking	24
7	Information to be supplied by the manufacturer	25
7.1	Information to be supplied with the suit, suit system or component.....	25
7.2	Customer information to be supplied at the point of sale	25
7.3	Instructions for use.....	25
Annex A	(normative) Rating of practical performance, thermal comfort and perceived exertion	27
A.1	Practical Performance: Scale.....	27
A.2	Thermal Comfort: Scale and Questionnaire.....	27
A.3	Perceived Exertion: Scale and Questionnaire	28
Annex B	(informative) Significant technical changes between this European Standard and the previous edition of EN 14225-3	29
Annex ZA	(informative) Relationship between this European Standard and the Essential requirements of Directive 89/686/EEC aimed to be covered.....	31
Annex ZB	(informative) Relationship between this European Standard and the Essential Requirements of Regulation (EU) 2016/425 aimed to be covered	33
Bibliography	35

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 045¹⁾, *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>.