

STN	Práce pod napätím Ochrana očí, tváre a hlavy pred účinkom elektrického oblúka Skúšobné metódy a funkčné požiadavky	STN EN IEC 62819 35 9725
------------	---	--

Live working - Eye, face and head protectors against the effects of electric arc - Performance requirements and test methods

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/23

Obsahuje: EN IEC 62819:2023, IEC 62819:2022

137283

EUROPEAN STANDARD

EN IEC 62819

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2023

ICS 13.260; 29.240.99; 29.260.99

English Version

**Live working - Eye, face and head protectors against the effects
of electric arc - Performance requirements and test methods
(IEC 62819:2022)**

Travaux sous tension - Protecteurs des yeux, du visage et
de la tête contre les effets de l'arc électrique - Exigences de
performances et méthode d'essai
(IEC 62819:2022)

Arbeiten unter Spannung - Augen-, Gesichts- und
Kopfschutz gegen die Auswirkungen eines Störlichtbogens
- Anforderungen und Testmethoden
(IEC 62819:2022)

This European Standard was approved by CENELEC on 2022-12-21. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

EN IEC 62819:2023 (E)**European foreword**

The text of document 78/1397/FDIS, future edition 1 of IEC 62819, prepared by IEC/TC 78 "Live working" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62819:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-11-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-05-26

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62819:2022 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60825-1:2014	NOTE	Approved as EN 60825-1:2014 (not modified) + A11:2021
IEC 60895	NOTE	Approved as EN IEC 60895
ISO 4007:2018	NOTE	Approved as EN ISO 4007:2018 (not modified)
ISO 4869-1:2018	NOTE	Approved as EN ISO 4869-1:2018 (not modified)
ISO 8980-1:2017	NOTE	Approved as EN ISO 8980-1:2017 (not modified)
ISO 8980-2:2017	NOTE	Approved as EN ISO 8980-2:2017 (not modified)
ISO/TR 11610:2004	NOTE	Approved as CEN ISO/TR 11610:2004 (not modified)
ISO 19011:2018	NOTE	Approved as EN ISO 19011:2018 (not modified)
ISO 21987:2017	NOTE	Approved as EN ISO 21987:2017 (not modified)
ISO 18526-1:2020	NOTE	Approved as EN ISO 18526-1:2020 (not modified)
ISO 18526-4:2020	NOTE	Approved as EN ISO 18526-4:2020 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	-	-
IEC 61318	2021	Live working - Methods for assessment of defects and verification of performance applicable to tools, devices and equipment	EN IEC 61318	2021
IEC 61477	2009	Live working - Minimum requirements for the utilization of tools, devices and equipment	EN 61477	2009
-	-		+ corrigendum Mar.	2010
IEC 61482-1-1	2019	Live working - Protective clothing against the thermal hazards of an electric arc - Part 1-1: Test methods - Method 1: Determination of the arc rating (ELIM, ATPV and/or EBT) of clothing materials and of protective clothing using an open arc	EN IEC 61482-1-1	2019
IEC 61482-1-2	2014	Live working - Protective clothing against the thermal hazards of an electric arc - Part 1-2: Test methods - Method 2: Determination of arc protection class of material and clothing by using a constrained and directed arc (box test)	EN 61482-1-2	2014
IEC 61482-2 (mod)	2018	Live working - Protective clothing against the thermal hazards of an electric arc - Part 2: Requirements	EN 61482-2	2020
ISO 3758	2012	Textiles - Care labelling code using symbols	EN ISO 3758	2012
ISO 15025	2016	Protective clothing - Protection against flame - Method of test for limited flame spread	EN ISO 15025	2016

EN IEC 62819:2023 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 16321-1	2021	Eye and face protection for occupational use - Part 1: General requirements	EN ISO 16321-1	2022
ISO 16321-2	2021	Eye and face protection for occupational use - Part 2: Additional requirements for protectors used during welding and related techniques	EN ISO 16321-2	2021
ISO 16976	series	Respiratory protective devices - Human factors	-	-
ISO 18526-2	2020	Eye and face protection - Test methods - Part 2: Physical optical properties	EN ISO 18526-2	2020
ISO 18526-3	2020	Eye and face protection - Test methods - Part 3: Physical and mechanical properties	EN ISO 18526-3	2020



IEC 62819

Edition 1.0 2022-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Live working – Eye, face and head protectors against the effects of electric arc –
Performance requirements and test methods**

**Travaux sous tension – Protecteurs des yeux, du visage et de la tête contre les
effets de l'arc électrique – Exigences de performances et méthodes d'essai**



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2022 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 62819

Edition 1.0 2022-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Live working – Eye, face and head protectors against the effects of electric arc –
Performance requirements and test methods**

**Travaux sous tension – Protecteurs des yeux, du visage et de la tête contre les
effets de l'arc électrique – Exigences de performances et méthodes d'essai**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 13.260; 29.240.99; 29.260.99

ISBN 978-2-8322-5690-9

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms, definitions and symbols	8
3.1 Terms and definitions	8
3.2 Abbreviated terms, symbols and units	15
4 Requirements	15
4.1 General	15
4.2 Design requirements	15
4.3 Mechanical and optical requirements	16
4.3.1 Mechanical and optical requirements for a device or the part of a device covering eyes or face	16
4.3.2 Mechanical requirements for a device or a part of a device other than those protecting the eyes or face	20
4.4 Arc thermal protection requirements	20
4.4.1 General	20
4.4.2 General requirements for protective devices or combination of devices	21
4.4.3 Additional requirements for face shields	21
4.4.4 Additional requirements for helmets	21
4.4.5 Protection requirement of protectors protecting against an electric arc	21
4.4.6 Other requirements for textile components	22
4.4.7 Performance verification for exposed and not exposed accessories	22
4.5 Marking	23
4.6 Instructions for use	24
5 Test procedures	26
5.1 General	26
5.2 Test against the effects of an electric arc	26
5.2.1 Type tests	26
5.2.2 Type testing method for the determination of the arc rating values ATPV, EBT and/or ELIM	26
5.2.3 Type testing method for the determination of the arc protection class	32
5.2.4 Testing of protectors intended to provide 360° protection	35
5.2.5 Additional tests for face shields allowing various wearing distances to the face or different wearing distances associated with different helmets	36
5.3 Test report	37
5.4 Marking	37
5.4.1 Visual inspection	37
5.4.2 Durability of marking	37
5.5 Instructions for use	37
6 Method of assessment of defects and verification of performance applicable to protectors having completed the production phase	37
6.1 General	37
6.2 Completeness and correctness of assembly	38
6.3 Product finishing	38
6.4 Functioning	38
6.5 Optical properties	38

6.6	Alternative means to test protectors against the effects of an electric arc when the production phase has been completed	38
6.7	Packaging and labelling	38
7	Modifications	38
	Annex A (normative) Symbol: Protection against the thermal effect of the electric arc (IEC 60417-6353:2016-02).....	39
	Annex B (informative) Marking examples	40
	Annex C (informative) Use and maintenance	42
	C.1 Use	42
	C.2 Maintenance	42
	Annex D (normative) Chronological order of type tests.....	43
	Annex E (normative) Classification of defects	45
	Annex F (informative) Rationale for the classification of defects.....	46
	Bibliography.....	47
	Figure 1 – Reference points	19
	Figure 2 – Schematic view of test set-up, indicating vertical and horizontal positioning of test head on top of mannequin with respect to arc electrodes for open-arc test.....	29
	Figure 3 – Test head with four calorimetric sensors for open-arc test.....	30
	Figure 4 – Test set-up: Schematic view of test set-up, indicating vertical and horizontal positioning of test head on top of torso with respect to arc electrodes for box-test	33
	Figure 5 – Test head with four calorimetric sensors for the box-test.....	34
	Table 1 – LT classes.....	17
	Table 2 – Minimum of specimens mounted on a test head exposed to an arc from the side and/or the back	36
	Table B.1 – Protective performance information.....	41
	Table D.1 – List of type tests	43
	Table E.1 – Classification of defects and associated requirements and tests	45
	Table F.1 – Justification for the type of defect.....	46

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**LIVE WORKING – EYE, FACE AND HEAD PROTECTORS
AGAINST THE EFFECTS OF ELECTRIC ARC –
PERFORMANCE REQUIREMENTS AND TEST METHODS**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62819 has been prepared by IEC technical committee 78: Live working. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
78/1397/FDIS	78/1399/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

Terms defined in Clause 3 are given in *italic* print throughout this document.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document has been prepared in accordance with the requirements of IEC 61477 where applicable.

The product covered by this document can have an impact on the environment during some or all stages of its life cycle. These impacts can range from slight to significant, be short-term or long-term, and occur at the global, regional or local level.

This document does not include requirements and test provisions for the manufacturers of the product or recommendations to the users of the product for environmental improvement. However, all parties intervening in its design, manufacture, packaging, distribution, use, maintenance, repair, reuse, recovery and disposal are invited to take account of environmental considerations.

LIVE WORKING – EYE, FACE AND HEAD PROTECTORS AGAINST THE EFFECTS OF ELECTRIC ARC – PERFORMANCE REQUIREMENTS AND TEST METHODS

1 Scope

This document is applicable to eye, face and head *protectors* used in work where there is a risk of exposure to an *electric arc* hazard.

Such *protectors* consist of one or several *devices* (e.g. *hood, goggles, balaclavas, face shields, helmets*, etc.), which might need to be combined together in order to give protection to eye, face and head for the intended use.

This document covers the performance requirements for *protectors* and single protective *devices* considering thermal, optical and mechanical hazards of an *electric arc*.

Because of the limitations of test apparatus at very high energy arcs, no *arc rating* above 4 100 kJ/m² (100 cal/cm²) can be assigned to *protectors*.

This document does not cover protection against electric shock, noise, the consequences of physical and mental shock and the toxic influences caused by an *electric arc*.

This document does not cover *protectors* for work intentionally using an *electric arc*, e.g. arc welding, plasma torch.

This document does not cover face-screens for the reduction of an electric field inside conductive clothing in accordance with IEC 60895.

Any other claims of the manufacturer for protection against other hazards to eye or face (e.g. welding radiation, hazards occurring during fire-fighting) are outside the scope of the document.

Products designed and manufactured in accordance with this document contribute to the safety of the users provided they are used by skilled persons, in accordance with safe methods of work and the instructions for use.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60417, *Graphical symbols for use on equipment* (available at <http://www.graphical-symbols.info/equipment>)

IEC 61318:2021, *Live working – Methods for assessment of defects and verification of performance applicable to tools, devices and equipment*

IEC 61477:2009, *Live working – Minimum requirements for the utilization of tools, devices and equipment*

IEC 61482-1-1:2019, *Live working – Protective clothing against the thermal hazards of an electric arc – Part 1-1: Test methods – Method 1: Determination of the arc rating (ELIM, ATPV and/or EBT) of clothing materials and of protective clothing using an open arc*

IEC 61482-1-2:2014, *Live working – Protective clothing against the thermal hazards of an electric arc – Part 1-2: Test methods – Method 2: Determination of arc protection class of material and clothing by using a constrained and directed arc (box test)*

IEC 61482-2:2018, *Live working – Protective clothing against the thermal hazards of an electric arc – Part 2: Requirements*

ISO 3758:2012, *Textiles – Care labelling code using symbols*

ISO 15025:2016, *Protective clothing – Protection against flame – Method of test for limited flame spread*

ISO 16321-1:2021, *Eye and face protection for occupational use – Part 1: General requirements*

ISO 16321-2:2021, *Eye and face protection for occupational use – Part 2: Additional requirements for protectors used during welding and related techniques*

ISO 16976 (all parts), *Respiratory protective devices – Human factors*

ISO 18526-2:2020, *Eye and face protection – Test methods – Part 2: Physical optical properties*

ISO 18526-3:2020, *Eye and face protection – Test methods – Part 3: Physical and mechanical properties*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN