Live working - Protective clothing against the thermal hazards of an electric arc -Part 1-1: Test methods - Method 1 - Determination of the arc rating (ATPV orEBT50) of flame resistant materials for clothing

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 61482-1-1:2009 sisaldab Euroopa standardi EN 61482-1-1:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 61482-1-1:2009 consists of the English text of the European standard EN 61482-1-1:2009.
Standard on kinnitatud Eesti Standardikeskuse 31.08.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.08.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 16.07.2009.	Date of Availability of the European standard text 16.07.2009.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 13.220.40, 29.260

EUROPEAN STANDARD

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EN 61482-1-1

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English version

Live working - Protective clothing against the thermal hazards of an electric arc - Part 1-1: Test methods - Method 1: Determination of the arc rating (ATPV or E_{BT50}) of flame resistant materials for clothing

(IEC 61482-1-1:2009)

Travaux sous tension - Vêtements de protection contre les dangers thermiques d'un arc électrique - Partie 1-1: Méthodes d'essai - Méthode 1: Détermination de la caractéristique d'arc (ATPV ou E_{BT50}) de matériaux résistant à la flamme pour vêtements (CEI 61482-1-1:2009)

Arbeiten unter Spannung - Schutzkleidung gegen thermische Gefahren eines Lichtbogens - Teil 1-1: Prüfverfahren - Verfahren 1: Bestimmung der Lichtbogenkennwerte (ATPV oder E_{BT50}) von schwer entflammbaren Bekleidungsstoffen (IEC 61482-1-1:2009)

CENELEC

European Committee for Electrotechnical Standardization
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Foreword

The text of document 78/793/FDIS, future edition 1 of IEC 61482-1-1, prepared by IEC TC 78, Live working, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61482-1-1 on 2009-06-01.

This European Standard supersedes CLC/TS 61482-1:2003.

EN 61482-1-1:2009 includes the following significant technical change with respect to CLC/TS 61482-1:2003:

– addition of a detailed analysis of the sensor response.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-03-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-06-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 61482-1-1:2009 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 standards indicated:

IEC 61482-1-2	NOTE	Harmonized as EN 61482-1-2:2007 (not modified).
ISO 5077	NOTE	Harmonized as EN ISO 5077:2008 (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
ISO 3175-2	-[1)]	Textiles - Professional care, drycleaning and wetcleaning of fabrics and garments - Part 2: Procedure for testing performance when cleaning and finishing using tetrachloroethene	EN ISO 3175-2	1998[2)]
ISO 6330	-[1)]	Textiles - Domestic washing and drying procedures for textile testing	EN ISO 6330	2000[2)]
ISO 9151	-[1)]	Protective clothing against heat and flame - Determination of heat transmission on exposure to flame	-	-
ISO 15025	2000	Protective clothing - Protection against heat and flame - Method of test for limited flame spread	EN ISO 15025	2002

[1)] Undated reference.

[2)] Valid edition at date of issue.

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LIVE WORKING – PROTECTIVE CLOTHING AGAINST THE THERMAL HAZARDS OF AN ELECTRIC ARC –

Part 1-1: Test methods – Method 1: Determination of the arc rating (ATPV or E_{BT50}) of flame resistant materials for clothing

1 Scope

This part of IEC 61482 specifies test methods to measure the arc thermal performance value of materials intended for use in heat- and flame-resistant clothing for workers exposed to the thermal effects of electric arcs and the function of garments using these materials. These test methods measure the arc thermal performance value of materials which meet the following requirements: less than 100 mm char length and less than 2 s afterflame after removal from flame, when tested in accordance with ISO 15025, procedure B (bottom-edge ignition) on the outer material, and the char length measured using a modified ISO method as described in Annex A.

These methods are used to measure and describe the properties of materials, products, assemblies or garments, in response to convective and radiant energy generated by an electric arc in open air under controlled laboratory conditions.

The materials used in these methods are in the form of flat specimens for method A and garments for method B.

Method A is used to determine the arc rating of materials and material assemblies when tested in a flat configuration.

Method B is used to measure garment response, not arc rating, to an arc exposure including all the garment findings, sewing thread, fastenings, fabrics and other accessories when tested on a male mannequin torso. Method B is also used for accident replication.

It is the responsibility of the user of this part of IEC 61482 to establish appropriate safety and health practices prior to use. For specific precautions, see Clause 7.

The test methods in this part of IEC 61482 are not directed to classify by protection classes. Methods determining protection classes are prescribed in IEC 61482-1-2.

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 3175-2, *Textiles – Professional care, drycleaning and wetcleaning of fabrics and garments – Part 2: Procedure for testing performance when cleaning and finishing using tetrachloroethene*

ISO 6330, *Textiles – Domestic washing and drying procedures for textile testing*

ISO 9151, *Protective clothing against heat and flame – Determination of heat transmission on exposure to flame*

ISO 15025:2000, *Protective clothing – Protection against heat and flame – Method of test for limited flame spread*

3 Terms, definitions and symbols

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

NOTE For definitions of other textile terms related to the topic, see ASTM D-123 [7][1)].

3.1 Terms and definitions

3.1.1
arc duration
time duration of the arc

NOTE Arc duration is expressed in s.

3.1.2
arc energy
W_{arc}
electrical energy supplied to the arc and converted in the arc; sum of the instantaneous arc voltage values multiplied by the instantaneous arc current values multiplied by the incremental time values during the arc duration

NOTE Arc energy is expressed in kJ or kW·s.

3.1.3
arc gap
distance between the arc electrodes

NOTE Arc gap is expressed in mm.

3.1.4
arc rating
value attributed to materials or material systems that describes their performance to exposure to an electrical arc discharge

NOTE The arc rating is expressed in kW·s/m^2 – or optionally in cal/cm^2 – and is derived from the determined value of ATPV or E_{BT50} (should a material or material system exhibit a breakopen response below the ATPV value).

3.1.5
arc thermal performance value (ATPV)
in arc testing, the incident energy on a material or a multilayer system of materials that results in a 50% probability that sufficient heat transfer through the tested specimen is predicted to cause the onset of a second degree skin burn injury based on the Stoll curve, without breakopen

NOTE ATPV is expressed in kJ/m^2 or kW·s/m^2 (cal/cm^2).

3.1.6
arc voltage
voltage across the arc

NOTE Arc voltage is expressed in V.

1) Figures in square brackets refer to the bibliography.