

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**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**

**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 valeur assignée
d'arc (ELIM, ATPV et/ou EBT) des matériaux pour vêtements et des vêtements de
protection utilisant un arc ouvert**



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

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

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CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	7
3 Terms, definitions, symbols and units	8
3.1 Terms and definitions.....	8
3.2 Symbols and units.....	13
4 Principle of test procedures A and B.....	13
4.1 Procedure A – <i>Material open arc</i> test procedure	13
4.2 Procedure B – <i>Garment open arc</i> test procedure.....	14
5 Significance and use of the test procedures A and B	14
5.1 General.....	14
5.2 Procedure A – <i>Material open arc</i> test procedure	15
5.3 Procedure B – <i>Garment open arc</i> test procedure.....	15
6 Test apparatus	15
6.1 General.....	15
6.2 Calorimetric <i>sensors</i>	15
6.2.1 <i>Calorimeter</i> construction.....	15
6.2.2 Panel <i>sensor</i> construction.....	17
6.2.3 Monitor <i>sensor</i> construction and positioning	19
6.3 Panel construction	20
6.4 Mannequin construction	22
6.5 Arrangement of panels and monitor <i>sensors</i> for testing according to Procedure A.....	23
6.6 Arrangement of mannequin(s) and monitor <i>sensors</i> for testing according to Procedure B.....	24
6.7 Supply bus and electrodes	28
6.7.1 General	28
6.7.2 Structural cage arrangement.....	28
6.7.3 Electrodes	30
6.7.4 Fuse wire.....	30
6.8 Electric supply	30
6.9 Test-circuit control	31
6.10 Data acquisition and data processing system.....	31
6.10.1 General	31
6.10.2 Data acquisition.....	31
6.10.3 Signal synchronization.....	32
7 Operator safety.....	32
8 Specimen preparation.....	33
8.1 Description of the test specimens	33
8.1.1 Test specimens for Procedure A	33
8.1.2 Test specimens for Procedure B	33
8.2 Pre-treatment of test specimens by cleaning.....	34
8.3 Pre-conditioning of the test specimens.....	34
9 Calibration and verification	34
9.1 Data acquisition system pre-calibration.....	34
9.2 Verification of <i>calorimeters</i>	34

9.3	Arc exposure and apparatus verification for the two- <i>sensor</i> panels and the monitoring <i>sensors</i>	35
9.3.1	Set-up of electrodes and fuse wire.....	35
9.3.2	Positioning of the two- <i>sensor</i> panels, mannequins and monitor <i>sensors</i>	35
9.3.3	Verification <i>bare shot</i>	35
9.3.4	Verification <i>bare shot</i> test protocol.....	36
10	Test apparatus care and maintenance	36
10.1	Surface reconditioning	36
10.2	Care of panels, mannequins and <i>sensors</i>	37
10.3	Care of electrodes	37
11	Test procedures	37
11.1	Procedure A – testing with panels.....	37
11.1.1	Test parameter and settings	37
11.1.2	Sequence of tests with test specimens of <i>material</i> or <i>material assembly</i>	37
11.1.3	Criteria for set of data obtained from iterative process of <i>test shots</i>	38
11.2	Procedure B – testing with mannequins	39
11.2.1	Test parameters and settings.....	39
11.2.2	Single test or sequence of tests with test specimen(s) of <i>garment</i> or <i>garment assembly</i>	39
11.3	Air ventilation and initial temperature of <i>sensors</i>	40
11.4	Specimen mounting	40
11.4.1	Procedure A – testing with panels.....	40
11.4.2	Procedure B – testing with mannequins	40
11.5	Specimen description.....	42
11.6	Test protocol.....	42
12	Test results	43
12.1	Heat calculation	43
12.1.1	General	43
12.1.2	Copper heat capacity.....	43
12.1.3	Incident and transmitted energy.....	43
12.1.4	Panel <i>sensor</i> response (transmitted energy (E_t) comparison with <i>Stoll curve</i>).....	44
12.1.5	Monitor <i>sensor</i> responses (<i>incident energy</i> (E_i))	45
12.2	Determination of <i>arc thermal performance value</i> (<i>ATPV</i>).....	46
12.3	Determination of <i>breakopen threshold energy</i> (<i>EBT</i>).....	46
12.4	Determination of the <i>incident energy limit</i> (<i>ELIM</i>).....	47
12.5	Visual inspection.....	47
12.6	<i>Arc rating</i>	49
12.6.1	<i>Arc rating</i> of a <i>material</i> or <i>material assembly</i>	49
12.6.2	<i>Arc rating</i> of a <i>garment</i> or <i>garment assembly</i>	49
13	Test report.....	50
13.1	Reporting requirements common for tests according to Procedures A and B.....	50
13.2	Reporting requirements specific for tests according to Procedure A.....	51
13.3	Reporting requirements specific for tests according to Procedure B	52
Annex A	(informative) Logistic regression technique	54
Annex B	(informative) 95 % confidence intervals of <i>ATPV</i> and <i>EBT</i>	56
Annex C	(informative) Iterative process of <i>test shots</i> of Procedure A	60
Annex D	(informative) Example <i>materials</i> for insulating and mounting boards	61

D.1	General.....	61
D.2	<i>Materials</i> for use as thermally insulating mounting board (6.2).....	61
D.3	<i>Materials</i> for use as mounting board, but not sufficiently thermally insulating for use as insulating board (6.3).....	62
Annex E (informative) Recommended provisions for use of the test method for accident replication and for research		63
Bibliography.....		64
Figure 1	– Example of <i>calorimeter</i> construction.....	17
Figure 2	– Example of the panel <i>sensor</i> construction	18
Figure 3	– Example of monitor <i>sensor</i> construction, with optional cover plate	19
Figure 4	– Panel	21
Figure 5	– Example of <i>material</i> clamping assembly of a panel	22
Figure 6	– Arrangement of three two- <i>sensor</i> panels with monitoring <i>sensors</i> (top view) for testing according to Procedure A	24
Figure 7	– Relative positioning of arc electrodes and of mannequin(s) and monitor <i>sensors</i> for testing according to Procedure B	25
Figure 8	– Examples of mannequin configuration	27
Figure 9	– Example of cage arrangement (supply bus, bus tubes and arc electrodes) shown together with three panels for testing according to Procedure A (monitor <i>sensors</i> are not shown).....	29
Figure 10	– Relative positioning of cage arrangement (supply bus, bus tubes and arc electrodes) and of one torso mannequin and its monitor <i>sensors</i> for testing according to Procedure B.....	30
Figure 11	– Typical average transmitted energy curves $Q_{t,avg}$ (i.e. average response of the two <i>sensors</i> of same panel) for test specimens	45
Figure B.1	– Probability density function (PDF)	56
Figure B.2	– Cumulative density (CDF)	57
Figure B.3	– Graph with probability, lower and upper limits	59
Table 1	– Positioning of monitor <i>sensors</i> depending on <i>incident energy</i> exposure.....	20
Table 2	– Reporting requirements and rating of visual inspection performance in case of testing clothing <i>material(s)</i> according to Procedure A and <i>garment(s)</i> or an assembly of <i>garments</i> according to Procedure B.....	47
Table 3	– Visual assessment criteria in case of testing <i>garment(s)</i> or a <i>garment assembly</i> according to Procedure B	50
Table B.1	– Example of <i>incident energy</i> X and binary response Y (fulfillment of Stoll criteria) for 21 <i>test shots</i>	58

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**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**

FOREWORD

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International Standard IEC 61482-1-1 has been prepared by IEC technical committee 78: Live working.

This second edition cancels and replaces the first edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- addition of the *Incident energy limit (ELIM)* as a further *arc rating* performance property value;
- replacement of char length requirement in the scope by indication that Procedure A is applicable for testing of *materials* meeting the limited flame spread requirements of IEC 61482-2;

- clarification of the definition and the meaning of the *Stoll curve*;
- modification of specification of positioning of *monitor sensors* with respect to the *electric arc* as function of intended high *incident energy* exposure of test specimens;
- modification of specifications of *monitor sensor* construction;
- specification of black paint;
- elimination of *calorimeters* from the chest of the mannequin;
- specification for possible positioning of mannequin(s) at a height different from the centre of the *electric arc* and possible turning in order to adequately expose all parts of the *garment* or clothing which would affect performance;
- more explicit description of requirements for data acquisition system;
- preconditioning of the samples;
- modification of requirements for apparatus and arc exposure verification by *bare shots*;
- more explicit description of test procedures A and B, in particular the subclauses dealing with “sequence of test”, “test parameter” and “test criteria”;
- addition of determination of *arc rating* values of *garments* and/or *garment* assemblies.

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

FDIS	Report on voting
78/1256/FDIS	78/1262/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard terms defined in Clause 3 appear in *italics*.

A list of all parts in the IEC 61482 series, published under the general title *Live working – Protective clothing against the thermal hazards of an electric arc*, can be found on the IEC website.

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

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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 (ELIM, ATPV and/or EBT) of clothing materials and of protective clothing using an open arc

1 Scope

This part of IEC 61482 specifies test method procedures to determine the *arc rating of flame resistant clothing materials and garments or assemblies of garments* intended for use in clothing for workers if there is an *electric arc* hazard.

An *open arc* under controlled laboratory conditions is used to determine the values of *ELIM*, *ATPV* or *EBT* of *materials, garments or assemblies of garments*.

NOTE 1 The user can, if he desires, classify the arc protective performance into *arc rating* protection levels based on *ELIM*, *ATPV* and/or *EBT* values which correspond best to the different hazard and risks levels that can result from the user's risk analysis.

NOTE 2 This document is not dedicated to classifying the arc protective performance of the *material* and clothing into arc protection classes. Procedures determining these arc protection classes APC1 and APC2 are specified in IEC 61482-1-2, which uses a constrained arc for testing.

NOTE 3 This test method is not intended and not appropriate to evaluate whether *materials or garments are flame resistant* or not, as this is covered in IEC 61482-2.

Other effects than the thermal effects of an *electric arc* like noise, light emissions, pressure rise, hot oil, electric shock, the consequences of physical and mental shock or toxic influences are not covered by this document.

Protective clothing for work intentionally using an *electric arc*, e.g. arc welding, plasma torch, is not covered by this document.

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 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

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

ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories*

ISO/TR 11610, *Protective clothing – Vocabulary*

ISO 11612:2015, *Protective clothing – Clothing to protect against heat and flame – Minimum performance requirements*