



# SLOVENSKI STANDARD

## SIST EN 60743:2003

01-julij-2003

Nadomešča:  
SIST EN 60743:2000

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### Delo pod napetostjo – Izrazje za orodje in opremo (IEC 60743:2001)

Live working - Terminology for tools, equipment and devices

Arbeiten unter Spannung - Terminologie für Werkzeuge, Ausrüstungen und Geräte

Travaux sous tension - Terminologie pour l'outillage, le matériel et les dispositifs  
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Ta slovenski standard je istoveten z: ~~SIST EN 60743:2000~~ **EN 60743:2001**

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**SIST EN 60743:2003**

**en**

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EUROPEAN STANDARD

**EN 60743**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2001

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Supersedes EN 60743:1996

English version

**Live working -  
Terminology for tools, equipment and devices  
(IEC 60743:2001)**

Travaux sous tension -  
Terminologie pour l'outillage, le matériel et  
les dispositifs  
(CEI 60743:2001)

Arbeiten unter Spannung -  
Terminologie für Werkzeuge,  
Ausrüstungen und Geräte  
(IEC 60743:2001)

This European Standard was approved by CENELEC on 2001-12-01. 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 Central Secretariat or to any CENELEC member.

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**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 78/393/FDIS, future edition 2 of IEC 60743, prepared by IEC TC 78, Live working, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60743 on 2001-12-01.

This European Standard supersedes EN 60743:1996.

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) 2002-09-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-12-01

Annexes designated "normative" are part of the body of the standard.  
In this standard, annex ZA is normative.  
Annex ZA has been added by CENELEC.

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## iTeh **Endorsement notice** STANDARD PREVIEW (standards.iteh.ai)

The text of the International Standard IEC 60743:2001 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-195	1998	International Electrotechnical Vocabulary (IEV) Chapter 195: Earthing and protection against electric shock	-	-
IEC 60050-651	1999	Part 651: Live working	-	-
ISO/IEC Guide 51	1990	Guidelines for the inclusion of safety aspects in standards	-	-
ISO 472	1999	Plastics - Vocabulary	EN ISO 472	2001

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INTERNATIONALE  
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**60743**

Deuxième édition  
Second edition  
2001-11

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**Travaux sous tension –  
Terminologie pour l'outillage,  
le matériel et les dispositifs**

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International Electrotechnical Commission  
Международная Электротехническая Комиссия

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For price, see current catalogue*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**LIVE WORKING –  
TERMINOLOGY FOR TOOLS, EQUIPMENT AND DEVICES**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
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- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60743 has been prepared by IEC technical committee 78: Live working.

This second edition cancels and replaces the first edition, published in 1983, and its amendment 1 (1995), and constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
78/393/FDIS	78/403/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

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

## LIVE WORKING – TERMINOLOGY FOR TOOLS, EQUIPMENT AND DEVICES

### 1 General

#### 1.1 Scope

This International Standard applies to the terminology used to describe tools, equipment, devices and methods used in live working.

IEC 60050(651) gives the definitions of all terms used in live working. The present standard permits identification of the tools, equipment and devices and standardizes their names.

#### 1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(195):1998, *International Electrotechnical Vocabulary – Chapter 195: Earthing and protection against electric shock*

[SIST EN 60743:2003](#)

IEC 60050(651):1999, *International Electrotechnical Vocabulary – Chapter 651: Live working*

[a49b7f5f45c1/sist-en-60743-2003](#)

Guide ISO-IEC 51 :1990, *Guidelines for the inclusion of safety aspects in standards*

ISO 472:1999, *Plastics - Vocabulary*

### 2 General terms

#### 2.1 Live working and methods

##### 2.1.1

##### **live working (live work)**

activity in which a worker makes contact with energized or charged live parts or penetrates inside a live working zone with either parts of his or her body or with tools, equipment or devices being handled

NOTE 1 Examples of live working include maintenance, connection and disconnection operations.

NOTE 2 Live working is performed using specific methods: hot stick working, insulating glove working and bare hand working.

[IEV 651-01-01 modified]

**2.1.2****live part**

conductor or conductive part intended to be energized in normal operation, including a neutral conductor, but by convention not a PEN conductor [IEV 195-02-12] or PEM conductor [IEV 195-02-13] or PEL conductor [IEV 195-02-14]

NOTE This concept does not necessarily imply a risk of shock.

[IEV 651-01-03 modified]

**2.1.3****live working zone**

space around live parts where prevention of electrical hazard is assured by suitable means such as limiting access to skilled persons, maintaining the appropriate air distances and using tools for live working

NOTE 1 The limits of a live working zone are equal to or greater than the minimum working distance.

NOTE 2 The live working zone and the specific precautions that apply are generally defined by national or company regulations.

NOTE 3 In some countries the terms "danger zone" or "guard zone" are used instead of live working zone.

[IEV 651-01-06 modified]

**2.1.4****hot stick working**

live working according to a method whereby the worker remains at a specified distance from the live parts and carries out the work by means of insulating sticks

[IEV 651-01-09]

**2.1.5****insulating glove working**

live working according to a method whereby the worker is electrically protected by insulating gloves and other insulating equipment and carries out the work in direct mechanical contact with live parts

[IEV 651-01-10]

**2.1.6****bare hand working**

live working according to a method whereby the worker carries out the work in electrical contact with live parts, having the potential of the worker's body raised to the voltage of the live parts by electrical connection, and suitably isolated from the surroundings at a different potential

[IEV 651-01-11]

**2.2****tools for live working**

tools, devices and equipment specifically designed or adapted, tested and maintained as apparatus for live working

[IEV 651-01-24 modified]

**2.3 Difference between insulated and insulating tools****2.3.1****insulated tool**

tool made of conductive material, fully or partially covered by insulating material

[IEV 651-01-25]

### 2.3.2

#### **insulating tool**

tool made essentially or totally from insulating material

[IEV 651-01-26]

## 2.4 Components of insulating tools

### 2.4.1

#### **end fitting**

part permanently fitted to the end of the insulating tube or rod

[IEV 651-02-02 modified]

### 2.4.2

#### **foam (in live working)**

insulating material composed of closed cells, generally made of polyurethane, used to prevent the ingress and migration of moisture

NOTE Foam is generally used to fill tubes and similar insulating structures.

[IEV 651-02-03]

### 2.4.3

#### **elastomer**

generic term that includes rubber, latex and elastomeric compounds that may be natural or synthetic or a mixture or a combination of both

### 2.4.4

#### **plastic**

material which contains as an essential ingredient a high polymer and which at some stage in its processing into finished products can be shaped by flow

NOTE 1 Elastomeric materials, which also are shaped by flow, are not considered as plastics.

NOTE 2 In some countries, particularly in the United Kingdom, it is a permitted option to use the term « plastics » as the singular form as well as the plural form.

[ISO 472]

### 2.4.5

#### **insulating rod (in live working)**

long-shaped piece, normally of circular cross section, which is constructed or formed from synthetic insulating and rigid material and which may be reinforced

[IEV 651-02-04 modified]

### 2.4.6

#### **insulating tube (in live working)**

long-shaped hollow piece, normally of circular cross section, which is constructed or formed from synthetic insulating and rigid material and is normally reinforced, the interior of which can be foam-filled

[IEV 651-02-05 modified]

## 2.5 Insulating sticks, assemblies and tools

### 2.5.1

#### **insulating stick**

insulating tool essentially made of insulating tube and/or rod with end fittings

[IEV 651-02-01]

**2.5.2****hand stick**

insulating stick manipulated by hand, used to operate on live parts at a distance

[IEV 651-02-07]

**2.5.3****attachable universal tool (in live working)**

tool designed to be affixed at the end of a universal hand stick

NOTE This tool permits a variety of tasks to be carried out such as:

- to hold various parts: e.g. adjustable insulator fork, screw clamp, pin holder;
- to install or to pull out parts: e.g. split-pin installer, split-pin remover;
- to manipulate binding ties: e.g. rotary blades, rotary prongs.

[IEV 651-03-01]

**2.5.4****support stick**

insulating stick used to hold or move conductors and other equipment

[IEV 651-12-12]

**2.5.5****insulating assemblies**

various arrangements of support sticks and accessories for lifting, moving and/or supporting loads such as conductors, insulators, etc.

**2.6****protective cover**

rigid or flexible cover made of insulating material used to cover live and/or dead parts and/or adjacent earthed (grounded) parts in order to prevent contact

NOTE 1 A protective cover is only used to provide protection when a worker inadvertently comes into momentary contact with the protective cover.

NOTE 2 The selection of the protective cover is based on the system operating voltage.

[IEV 651-04-01 modified]

**2.7****working distance**

air distance in the work location, determined to sustain the required insulation level for live working, and being ensured either by physical means or by skilled person following instructions and procedures

[IEV 651-01-19 modified]

**2.7.1****minimum working distance****minimum approach distance**

minimum distance in air to be maintained between any part of the body of a worker, including any object (except appropriate tools for live working) being directly handled, and any parts at different potentials

NOTE 1 The minimum working distance is the sum of the electrical distance, corresponding to the maximum nominal voltage calculated in accordance with IEC 61472, and the selected ergonomic distance appropriate to the work being undertaken.

NOTE 2 "Appropriate tools" are tools for live working suitable for the maximum nominal voltage of the live parts.

[IEV 651-01-20 modified]

### 2.7.2

#### **electrical distance**

distance in air required to prevent a disruptive discharge between energized parts or between energized parts and earthed parts during live working

NOTE When safety precautions are taken, the probability of a disruptive discharge is negligible. Safety is defined as freedom from unacceptable risk of harm (see Guide ISO-IEC 51:1990).

[IEV 651-01-21 modified]

### 2.7.3

#### **ergonomic distance**

distance in air to take into account inadvertent movement and errors in judgement of distances while performing work

[IEV 651-01-22]

### 2.7.4

#### **handling zone (in live working)**

area marked on the insulated or insulating tool in which it is permissible to handle the tool

NOTE This zone gives the assurance that requirements equivalent to the minimum working distance are fulfilled when the tool is used according to its instructions.

[IEV 651-02-06]

### 2.7.5

#### **vicinity zone**

limited space outside the live working zone where an electrical hazard can exist

[IEV 651-01-07]

### 2.7.6

#### **working in the vicinity of live parts**

activity in which a worker with part of his or her body, with a tool or with any other object enters into the vicinity zone without encroaching into the live working zone

[IEV 651-01-02]

### 2.7.7

#### **disruptive discharge**

passage of an arc following dielectric breakdown

NOTE 1 The term “sparkover” (in French “amorçage”) is used when a disruptive discharge occurs in a gaseous or liquid dielectric.

NOTE 2 The term “flashover” (in French “contournement”) is used when a disruptive discharge occurs over the surface of a solid dielectric surrounded by a gaseous or liquid medium.

NOTE 3 The term “puncture” (in French “perforation”) is used when a disruptive discharge occurs through a solid dielectric.

[IEV 651-01-18]

### 2.7.8

#### **skilled person (electrically)**

person with relevant education and experience to enable him or her to analyse risks and to avoid hazards which electricity can create

[IEV 651-01-33 modified]

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