

# INTERNATIONAL STANDARD

# IEC 62115

Edition 1.1

2004-11

Edition 1:2003 consolidated with amendment 1:2004

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**Electric toys –  
Safety**

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: [inmail@iec.ch](mailto:inmail@iec.ch) Web: [www.iec.ch](http://www.iec.ch)

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTRIC TOYS – SAFETY

## 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.
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International Standard IEC 62115 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 62115 is based on the first edition (2003) [documents 61/2263/FDIS and 61/2323/RVD] and its amendment 1 (2004) [documents 61/2711/FDIS and 61/2738/RVD].

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

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

NOTE The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,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

The following differences exist in the countries indicated below.

- 14.2: The requirement that controls shall not be incorporated in the transformer applies to all toys (CENELEC countries, except Germany).

A bilingual version of this publication may be issued at a later date.

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## INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

As a general rule, toys are designed and manufactured for particular categories of children. Their characteristics are related to the age and stage of development of the children and their intended use presupposes certain capabilities.

Accidents are frequently due to a toy either being given to a child for whom it is not intended or being used for a purpose other than for which it was designed. This standard does not eliminate parental responsibility for the appropriate selection of toys. It is assumed that when choosing a toy or a game, account is taken of the physical and mental development of the child who will be playing with it.

The aim of this standard is to reduce risks when playing with toys, especially those risks that are not evident to users. However, it has to be recognized that some toys have risks inherent in their use that cannot be avoided. Consideration has been given to reasonably foreseeable use, bearing in mind that children are not generally as careful as adults.

While this standard applies to new toys, it nevertheless takes into account the wear and tear of toys in use.

The fact that a toy complies with this standard does not absolve parents and other persons in charge of a child from the responsibility of supervising the child. Supervision is also necessary when children of various ages have access to the same toy.

This standard covers the whole range of electric toys from small button cell operated lights to large sit-on cars powered by lead-acid cells. This results in different requirements and tests according to the type of toy. For some toys, testing can be reduced if particular criteria are met (see Clause 6).

A toy that complies with the text of this standard will not necessarily be judged to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

A toy employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the standard.

## ELECTRIC TOYS – SAFETY

### 1 Scope

This International Standard deals with the safety of **toys** that have at least one function dependent on electricity.

NOTE 1 Examples of **toys** also within the scope of this standard are

- **constructional sets**;
- **experimental sets**;
- functional **toys** (models that have a function similar to an appliance or installation used by adults);
- video **toys** (**toys** consisting of a screen and activating means, such as a joystick or keyboard. Separate screens having a **rated voltage** exceeding 24 V are not considered to be a part of the **toy**).

Additional requirements for **experimental sets** are given in Annex A.

**Toys** using electricity for secondary functions are within the scope of this standard.

NOTE 2 A doll's house having an interior lamp is an example of such a **toy**.

Additional requirements for **toys** incorporating **lasers** and **light-emitting diodes** are given in Annex E.

In order to comply with this standard, electric toys also have to comply with ISO 8124-1, since it covers hazards other than those arising by the use of electricity.

NOTE 3 **Transformers for toys** and battery chargers are not considered to be a **toy**, even if supplied with it.

NOTE 4 If it is intended that a child also plays with the packaging, the latter is considered to be part of the **toy**.

NOTE 5 This standard does not apply to

- toy steam engines;
- scale models for adult collectors;
- folk dolls and decorative dolls and other similar articles for adult collectors;
- sports equipment;
- aquatic equipment intended to be used in deep water;
- equipment intended to be used collectively in playgrounds;
- amusement machines (IEC 60335-2-82);
- professional **toys** installed in public places (shopping centres, stations, etc.);
- products containing heating elements intended for use under the supervision of an adult in a teaching context;
- portable child-appealing luminaires (IEC 60598-2-10);
- Christmas decorations.

### 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.

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60083, *Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC*

IEC 60086-2, *Primary batteries – Part 2: Physical and electrical specifications*



IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60384-14, *Fixed capacitors for use in electronic equipment – Part 14: Sectional specification – Fixed capacitors for electromagnetic interference suppression and connection to the supply mains*

IEC 60417-1, *Graphical symbols for use on equipment – Part 1: Overview and application*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60695-2-2:1991, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*

IEC 60695-2-11, *Fire Hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

IEC 60695-2-13, *Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignitability test method for materials*

IEC 60695-10-2, *Fire hazard testing – Part 10: Guidance and test methods for the minimization of the effects of abnormal heat on electrotechnical products involved in fires – Section 2: Method for testing products made from non-metallic materials for resistance to heat using the ball pressure test*

IEC 60695-11-10, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

IEC 60730-1:1999, *Automatic electrical controls for household and similar use – Part 1: General requirements*

IEC 60738-1, *Thermistors – Directly heated positive step-function temperature coefficient – Part 1: Generic specification*

IEC 60825-1:1993, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide*

Amendment 1 (1997)

Amendment 2 (2001) including its corrigendum 1 (2002)<sup>1</sup>

IEC 61032:1997, *Protection of persons and equipment by enclosures – Probes for verification*

IEC 61058-1:2000, *Switches for appliances – Part 1: General requirements*

IEC 61558-2-7, *Safety of power transformers, power supply units and similar – Part 2: Particular requirements for transformers for toys*

ISO 7000, *Graphical symbols for use on equipment – Index and synopsis*

ISO 8124-1:2000, *Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*

ISO 8124-3, *Safety of toys – Part 3: Migration of certain elements*

ISO 9772, *Cellular plastics – Determination of horizontal burning characteristics of small specimens subjected to a small flame*

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<sup>1</sup> There exists a consolidated edition 1.2 (2001) that includes edition 1 and its amendments 1 and 2.

### 3 Definitions

For the purpose of this standard, the following definitions apply.

NOTE When the terms “voltage” and “current” are used, they imply r.m.s. values unless otherwise specified.

#### 3.1.1

##### **toy**

product intended for use by children under 14 years old for playing purposes

#### 3.1.2

##### **battery toy**

**toy** that contains or uses one or more batteries as the only source of electrical energy

NOTE The batteries may be in a **battery box**.

#### 3.1.3

##### **transformer toy**

**toy** that is connected to the supply mains through a **transformer for toys** and using the supply mains as the only source of electrical energy

#### 3.1.4

##### **dual-supply toy**

**toy** that can be operated as a **battery toy** and either simultaneously or alternatively as a **transformer toy**

#### 3.1.5

##### **battery box**

separate compartment for containing the batteries that is detachable from the **toy**

#### 3.1.6

##### **replaceable battery**

battery that can be replaced without breaking the **toy**

#### 3.1.7

##### **safety isolating transformer**

transformer, the input winding of which is electrically separated from the output winding by insulation at least equivalent to double insulation or reinforced insulation, which provides a supply at safety extra-low voltage

#### 3.1.8

##### **transformer for toys**

**safety isolating transformer** specially designed to supply **toys** operating at safety extra-low voltage not exceeding 24 V

NOTE The transformer may supply a.c. or d.c., or both.

#### 3.1.9

##### **constructional set**

collection of electric, electronic or mechanical parts intended to be assembled as various **toys**

#### 3.1.10

##### **experimental set**

collection of electric, electronic or mechanical components intended to be assembled in various combinations to demonstrate physical phenomena or other functions by children.

NOTE The assembly is not intended to create a **toy** or product for practical use.

### 3.2.1

#### **rated voltage**

voltage assigned to the **toy** by the manufacturer

### 3.2.2

#### **working voltage**

maximum voltage to which the part under consideration is subjected when the **toy** is supplied at its **rated voltage** and operating under **normal operation**

NOTE The change of voltage resulting from the operation of a switch or failure of a lamp is taken into account. However, the effect of transient voltages is ignored.

### 3.2.3

#### **rated power input**

power input assigned to the **toy** by the manufacturer

### 3.2.4

#### **rated current**

current assigned to the **toy** by the manufacturer

NOTE If no current is assigned to the **toy**, the **rated current** is the current measured when the **toy** is supplied at **rated voltage** and operated under **normal operation**.

### 3.2.5

#### **normal operation**

condition under which the **toy** is played with as intended or in a foreseeable way when it is energized.

Sit-on **toys** and stand-on **toys** are loaded with

- 25 kg, if intended for children up to 3 years old;
- 50 kg, if intended for older children

### 3.3.1

#### **clearance**

shortest distance in air between two conductive parts or between a conductive part and the **accessible surface**

### 3.3.2

#### **creepage distance**

shortest distance along the surface of insulation between two conductive parts or between a conductive part and the **accessible surface**

### 3.4.1

#### **detachable part**

part that can be removed without the aid of a **tool**, a part that can be removed by a **tool** supplied with the **toy**, or a part that is removed in accordance with the instructions for use even if a **tool** is needed for removal

NOTE A part that can be opened is considered to be a part that can be removed.

### 3.4.2

#### **accessible part**

part or surface that can be touched by means of test probe 18 or 19 of IEC 61032, depending on the relevant age group

NOTE Both probes are relevant for **toys** intended for children spanning the two age groups.

### 3.4.3

#### **tool**

screwdriver, coin or other object that may be used to operate a screw, clip or similar fixing means

### 3.5.1

#### **thermostat**

temperature-sensing device, the operating temperature of which may be either fixed or adjustable and which during **normal operation** keeps the temperature of the controlled part between certain limits by automatically opening and closing a circuit

### 3.5.2

#### **thermal cut-out**

device that during abnormal operation limits the temperature of the controlled part by automatically opening the circuit or by reducing the current and that is constructed so that its setting cannot be altered by the user

### 3.5.3

#### **self-resetting thermal cut-out**

**thermal cut-out** that automatically restores the current after the relevant part of the **toy** has cooled down sufficiently

### 3.5.4

#### **non-self-resetting thermal cut-out**

**thermal cut-out** that requires a manual operation for resetting or replacement of a part, in order to restore the current

### 3.5.5

#### **electronic component**

part in which conduction is achieved principally by electrons moving through a vacuum, gas or semiconductor

### 3.5.6

#### **electronic circuit**

circuit incorporating at least one **electronic component**

## 4 General requirement

**Toys** shall be constructed so that the risks to persons or surroundings are reduced as far as possible when the **toy** is used as intended or in a foreseeable way.

*In general, this principle is achieved by fulfilling the relevant requirements specified in this standard and compliance is checked by carrying out all the relevant tests.*

## 5 General conditions for the tests

*Unless otherwise specified, tests are carried out in accordance with this clause.*

NOTE Some tests on **battery toys** can result in rupture or explosion of the batteries. Adequate precautions should be taken when conducting such tests.