

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

AMENDMENT 2  
AMENDEMENT 2

**Electric toys – Safety**

**Jouets électriques – Sécurité**

IEC 62115:2003/AMD2:2010  
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Withhold  
STANDARD PREVIEW  
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## FOREWORD

This amendment has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61/4051/FDIS	61/4079/RVD

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability 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- withdrawn,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.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

## FOREWORD

*In the differences existing in some countries for 14.2, delete ", except Germany".*

### 1 Scope

*Replace the fourth dashed item in NOTE 1 by the following*

- computer toys;
- toy computers;

*Replace the text in Note 3 by the following:*

**Transformers for toys** (IEC 61558-2-7 for linear types or IEC 61558-2-7 and IEC 61558-2-16 for switch mode types), **battery chargers** (IEC 60335-2-29) and **battery chargers** for use by children (IEC 60335-2-29 Annex AA) are not considered to be part of a **toy** even if supplied with a **toy**.

*In Note 5, replace the penultimate dashed item by the following:*

- portable luminaries for children (IEC 60598-2-10);
- video and computer games;
- blowers for inflatable activity **toys** (e.g. bouncy castles);

## **2 Normative references**

*Replace reference to IEC 60529 by the following:*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*  
Amendment 1 (1999)<sup>1</sup>

*Replace reference to IEC 60695-2-2 by the following:*

IEC 60695-11-5:2004, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

*Replace reference to IEC 60730-1 by the following:*

IEC 60730-1:2010, *Automatic electrical controls for household and similar use – Part 1: General requirements*

*Replace reference to IEC 61058-1 by the following:*

IEC 61058-1:2000, *Switches for appliances – Part 1: General requirements*  
Amendment 1 (2001)  
Amendment 2 (2007)<sup>2</sup>

*Replace reference to ISO 8124-1 by the following:*

ISO 8124-1:2009, *Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*

*Add the following new references:*

IEC 60335-1: 2010, *Household and similar electrical appliances – Safety – Part 1: General Requirements*

IEC 60335-2-29:2002, *Household and similar electrical appliances – Safety – Part 2-29: Particular requirements for battery chargers*  
Amendment 1 (2004)  
Amendment 2 (2009)<sup>3</sup>

IEC 60990:1999, *Methods of measurement of touch current and protective conductor current*

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<sup>1</sup> There exists a consolidated edition 2.1 (2001) that includes edition 2 and its Amendment 1.

<sup>2</sup> There exists a consolidated edition 3.2 (2008) that includes edition 4 and its Amendments 1 and 2.

<sup>3</sup> There exists a consolidated edition 4.2 (2010) that includes edition 4 and its Amendments 1 and 2.

### 3 Definitions

3.1.8 Add the following Note 2 and renumber the existing Note as Note 1.

NOTE 2 **Transformers for toys** are hereinafter also referred to as **transformers**.

3.2.5 Add the following new paragraph.

For all rechargeable **battery toys**, normal operation includes charging and overcharging.

Add the following new definitions:

#### 3.1.11

##### **computer toy**

**toy** intended to be used together with a computer, console, monitor screen or other audio-video equipment

NOTE 1 **Computer toys** have play value either as

- **toys** when not connected to a computer or screen such as steering wheels, video guns and toy keyboards; or
- **toys** when connected to a computer, console, monitor screen or other audio-video equipment.

NOTE 2 Joysticks and other peripherals without play value in themselves are not considered to be a part of the **computer toy**.

NOTE 3 Separate computers, screens, consoles and similar equipment, which the **toy** can connect to and that have a **rated voltage** exceeding 24 V, are not considered to be part of the **computer toy**.

#### 3.1.12

##### **battery charger**

appliance supplied by mains voltage, the only purpose being to recharge the batteries for a **toy**

NOTE If the batteries can be charged in the **toy**, and if the **toy** can still be operated while the batteries are being charged, the **battery charger** is also considered to be a **transformer** and the **toy** is considered to be a **dual supply toy**.

#### 3.1.13

##### **rechargeable battery toy**

**toy** provided with rechargeable batteries in which the batteries are charged through a connection to the **battery charger** without removing the batteries from the **toy**

#### 3.1.14

##### **functional insulation**

insulation between conductive parts of different potential that is necessary only for the proper functioning of the **toy**

### 5 General conditions for the tests

5.8 Add the following new paragraph:

**Rechargeable battery toys that can be operated during charging are tested as dual supply toys because the battery charger is operating as a transformer.**

5.9 In Note 1, replace the words 'nickel cadmium' with 'rechargeable' and add a new sentence as follows:

However, for each test, the battery with the highest current, voltage or capacity that creates the most onerous condition is considered to be the most unfavourable battery.

## 6 Criteria for reduced testing

**6.2** Replace “15 and 17 to 19” by “15, 17 (except 17.1 for battery compartments intended to contain button cell batteries), 18 and 19”.

*Replace the first dashed item by the following:*

- the accessible insulation between parts of different polarity, except those in battery compartments, cannot be bridged by a straight steel pin having a diameter of 0,5 mm and any suitable length over 25 mm,

## 7 Marking and instructions

**7.4** Add the following paragraph after 4<sup>th</sup> paragraph:

The instructions for **dual supply toys** shall include the instructions required for both **battery toys** and **transformer toys**.

*Add the following to the fourth dash item in the 6<sup>th</sup> paragraph:*

(for **toys** supplied with a **battery charger** for use by children, this instruction may be replaced by: ‘Batteries are only to be charged by adults or by children at least 8 years old’).

**7.7** Add the following sentence after the existing first sentence of the first paragraph of the test specification.

*The petroleum spirit to be used for the test is aliphatic solvent hexane.*

*Replace Note 1 by the following:*

NOTE In considering the durability of the marking, the effect of normal wear such as frequent cleaning is taken into account.

*Delete Note 2.*

## 8 Power input

*Replace the requirement by the following:*

The power input of **transformer toys** and **dual supply toys** shall not exceed the **rated power input** by more than 20 %.

## 9 Heating and abnormal operation

**9.1** Replace the 4<sup>th</sup> paragraph of the test specification by the following:

**Transformer toys, dual supply toys and toys with battery boxes** are subjected to the test of 9.7.

*Add the following new sentence to the 8<sup>th</sup> paragraph of the test specification:*

However, during temperature rise tests of 9.3 and 9.4 on mobile **toys** such as radio controlled vehicles, **self-resetting thermal cut outs** are allowed to operate.

**9.2** Replace the 5<sup>th</sup> paragraph by the following:

**Transformer toys and dual supply toys** are supplied at 0,94 times or 1,06 times **rated voltage**, whichever is more unfavourable.

Add the following new sentence to the 6<sup>th</sup> paragraph:

Where thermocouples cannot successfully measure the maximum temperature during the test, thermal paper or other methods to measure temperature rise may be used.

Add the following new paragraph:

Mobile **toys** shall be tested in whichever use condition will create the highest temperature rise. When **non-self-resetting thermal cut-outs** operate, they are re-set a maximum of three times. **Toys** with **self-resetting thermal cut-outs** are tested until steady state conditions are established.

**9.3** Add the following sentence and note:

**Rechargeable battery toys** that can operate during recharging are also tested in the charging mode.

NOTE It may be necessary to reset timers on **the battery charger** to establish steady conditions.

**9.4** Replace the text by the following:

The test of 9.3 is repeated, the insulation between parts of different polarity, except those in battery compartments, being short circuited in turn if it is accessible after the removal of **detachable parts**, except lamps. However, the short circuit is only applied if it is possible to bridge the insulation by a straight steel pin having a diameter of 0,5 mm and any suitable length over 25 mm, or by a rod having a diameter of 1,0 mm inserted through holes in the enclosure up to a depth of 100 mm. The pin and the rod are hand guided and applied only with sufficient force to hold them in position.

For products that have to be kept switched on by hand or foot, if the applied short-circuit results in the product not functioning, the switch is released after 30 s.

**9.5** Add the following new paragraphs:

If the control consists only of positive temperature co-efficient resistors (PTCs), negative temperature co-efficient resistors (NTCs) or voltage dependent resistors (VDRs) they are not short-circuited if they are used within their manufacturers declared specification.

For products that have to be kept switched on by hand or foot, if the applied short-circuit results in the product not functioning, the switch is released after 30 s.

**9.7** Replace “**Transformer toys**,” by “**Transformer toys, dual supply toys**”.

**9.8.2** In item c) of the first paragraph, add the following new text:

or they are ceramic capacitors used within the manufacturer’s specification;

Add the following to the 3<sup>rd</sup> paragraph:



*For products that have to be kept switched on by hand or foot, if the applied fault-condition results in the product not functioning, the switch is released after 30 s.*

## 14 Construction

**14.1** *Replace the 2nd paragraph of the requirement by the following:*

The **working voltage** between any two **accessible parts** of the **toy** shall not exceed 24 V when the **toy** is supplied at **rated voltage**.

**14.2** *Replace the first paragraph of the requirement by the following:*

The **battery charger** and the transformer of **transformer toys** shall not be an integral part of the **toy**.

**14.3** *Replace the requirement by the following:*

**Transformer toys** and **dual supply toys** shall not be intended for use in water.

**14.4** *Replace the requirement by the following:*

**Transformer toys** and **dual supply toys** shall not be intended for use by children under three years old.

**14.10** *Replace the first paragraph of the requirement by the following:*

Plugs and socket-outlets of **toys** shall not be interchangeable with plugs and socket-outlets listed in IEC 60083. This requirement is not applicable to plugs which are too large to be introduced into the mains socket outlets or that are too small so they can only be loosely inserted and do not stay firmly in place in the socket outlet aperture while in contact with the supply mains.

**14.12** *Replace the text by the following:*

It shall not be possible to charge rechargeable batteries when they are in the **toy** unless

- for **toys** having a mass not exceeding 5 kg, it is not possible
  - to replace the rechargeable batteries by primary batteries without breaking the **toy**;
  - to charge separate batteries or other **toys** from the **toy**;
  - to make a connection of incorrect polarity when recharging the batteries;
  - to operate the **toy** during charging unless it complies with the requirements for a **dual supply toy**;
- for other **toys**,
  - the battery is fixed in the **toy**;
  - connecting means are provided that prevent connection to standardised primary batteries and ensure correct polarity during insertion and charging of the rechargeable batteries;
  - it is not possible to operate the **toy** during charging.

*Compliance is checked by inspection and the tests of this standard.*

Add the following new subclauses

**14.15** Internal parts of a **toy** having a voltage exceeding 24 V shall not lead to any risk of harmful electric shock.

*Compliance is checked by inspection and measurement. Protective parts or parts preventing access to live parts are removed, even if the **toy** has to be damaged.*

*The quantity of electricity and energy in the discharge is measured using a resistor having a nominal non-inductive resistance of 100 Ω. The current is measured using the circuit in Figure 4 of IEC 60990. In all conditions of test, the following values shall be met:*

- *the **working voltage** between any two parts of the **toy** shall not exceed 5 kV when the **toy** is supplied at **rated voltage**;*
- *the maximum current from a circuit with a generated voltage exceeding 24 V shall be less than 0,5 mA;*
- *the maximum energy from a circuit with a generated voltage exceeding 24 V shall be less than 2 mJ;*
- *the discharge shall not exceed 45 µC.*

**14.16 Battery toys** for children where the intended fixed position of the battery compartment can be above a child shall have a battery compartment that prevents battery electrolyte leakage from the **toy**.

NOTE Cot mobiles are an example of a **toy** where the fixed position of the battery compartment can be above the child.

*Compliance is checked by the following test.*

*All batteries are removed from the **toy**. The **toy** is placed in its normal orientation and the battery compartment is filled with the quantity of water specified in Table 2, the water being at a temperature of 21 °C ± 1 °C.*

*The **toy's** casing may be broken to gain access to the closed battery compartment in order to add water but any damage shall not affect the result of the test.*

*After adding the water, the compartment is closed in accordance with the manufacturer's instructions taking care to avoid losing any water from the **toy** before the test is started. The **toy** is left in position for a period of 5 min. During the test, water shall not leak from the **toy**.*

**Table 2 – Quantity of water per battery**

Battery type	Quantity of water ml
LR03/R03 (AAA)	0,25
LR6/R6 (AA)	0,5
LR14/R14 (C)	1,0
LR20/R20 (D)	2,0
6LR61/R61 (9V)	0,75
Button cells	0,1

## 16 Components

*Add the following new subclause:*

**16.4 Battery chargers** supplied with a **toy** shall comply with IEC 60335-2-29 and if they are **battery chargers** for use by children they shall comply with annex AA of that standard.

*Compliance is checked by the relevant tests and requirements of IEC 60335-2-29.*

NOTE **Battery chargers** are tested separately from the **toy**.

## 18 Clearances and creepage distances

*Replace the requirement by the following:*

**Clearances and creepage distances of functional insulation** shall not be less than 0,5 mm except when the **toy** meets the requirements of Clause 9 with this distance short circuited.

However, for **functional insulation** on printed circuit boards, except at their edges, this distance may be reduced to 0,2 mm provided that the degree of pollution in the microenvironment in which the insulation is located is unlikely to exceed pollution degree 2 during normal use of the **toy**.

Internal parts of **toys** that comply with subclause 14.15 and have a voltage exceeding 24 V shall have **clearance and creepage distances for functional insulation** equal to or greater than the values in Table 18 of IEC 60335-1 for pollution degree 2 except when the **toy** meets Clause 9 with this distance short circuited.

For guidance, the pollution degrees as defined in IEC 60335-1 are as follows:

Degrees of pollution in the microenvironment:

For the purpose of evaluating **creepage distances**, the following four degrees of pollution in the microenvironment are established

- pollution degree 1: no pollution or only dry, non-conductive pollution occurs. The pollution has no influence;
- pollution degree 2: only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is to be expected;
- pollution degree 3: conductive pollution occurs or dry non-conductive pollution occurs that becomes conductive due to condensation that is to be expected;
- pollution degree 4: the pollution generates persistent conductivity caused by conductive dust or by rain or snow.

NOTE Pollution degree 4 is not applicable to appliances.

## Annex B – Needle-flame test

*Replace the text of this annex by the following:*

The needle-flame test is carried out in accordance with IEC 60695-11-5 with the following modifications.