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Safety of toys - Part 1: Mechanical and physical properties

Sicherheit von Spielzeug - Teil 1: Mechanische und physikalische Eigenschaften

Sécurité des jouets - Partie 1: Propriétés mécaniques et physiques

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English Version

Safety of toys - Part 1: Mechanical and physical properties

Sécurité des jouets - Partie 1: Propriétés mécaniques et physiques

Sicherheit von Spielzeug - Teil 1: Mechanische und physikalische Eigenschaften

This European Standard was approved by CEN on 25 May 2011.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 71-1:2011) has been prepared by Technical Committee CEN/TC 52 “Safety of toys”, the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

This document supersedes EN 71-1:2005+A14:2011.

Annex B provides details of significant technical changes between this European Standard and the previous edition.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2009/48/EC.

For relationship with EU Directive 2009/48/EC, see informative Annex ZA, which is an integral part of this European Standard.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard constitutes the first part of the European Standard on safety of toys.

This European Standard for safety of toys consists of the following parts:

— Part 1: *Mechanical and physical properties*
— Part 2: *Flammability*
— Part 3: *Migration of certain elements*
— Part 4: *Experimental sets for chemistry and related activities*
— Part 5: *Chemical toys (sets) other than experimental sets*
— Part 7: *Finger paints — Requirements and test methods*
— Part 8: *Activity toys for domestic use*
— Part 9: *Organic chemical compounds — Requirements*
— Part 10: *Organic chemical compounds — Sample preparation and extraction*
— Part 11: *Organic chemical compounds — Methods of analysis*

NOTE 1 In addition to the above parts of EN 71, the following guidance documents have been published: CEN Report, CR 14379, *Classification of toys - Guidelines*, CEN Technical Report CEN/TR 15071, *Safety of toys - National translations of warnings and instructions for use in EN 71,* and CEN Technical Report CEN/TR 15371, *Safety of toys – Replies to requests for interpretation of EN 71-1, EN 71-2, and EN 71-8*.

NOTE 2 Different legal requirements may exist in non-EU countries.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard aims at reducing as far as possible those hazards which are not evident to users; it does not cover inherent hazards (e.g. instability of two-wheeled scooters, sharp needles in a sewing kit etc.) that are obvious to children or the persons in charge of them. Assuming that the toys are used in the intended manner they should not present any further hazard to children for whom they are intended (according to Directive 2009/48/EC “intended for use by” means that a parent or supervisor shall reasonably be able to assume by virtue of the functions, dimensions and characteristics of a toy that it is intended for use by children of the stated age group”). Allowance should also be made for foreseeable use, bearing in mind the behaviour of children who do not generally share the same degree of care as the average adult user.

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

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 that for which it was designed. Great care should therefore be taken when choosing a toy or game; account should be taken of the mental and physical development of the child who will be using it.

The requirements of this European Standard do not release parents or carers from their responsibility of watching over the child while he or she is playing.

1 Scope (see A.2)

This European Standard specifies requirements and methods of tests for mechanical and physical properties of toys.

This European Standard applies to toys for children, toys being any product or material designed or intended, whether or not exclusively, for use in play by children of less than 14 years. It refers to new toys taking into account the period of foreseeable and normal use, and that the toys are used as intended or in a foreseeable way, bearing in mind the behaviour of children.

It includes specific requirements for toys intended for children under 36 months, children under 18 months and for children who are too young to sit up unaided. According to Directive 2009/48/EC “intended for use by” means that a parent or supervisor shall reasonably be able to assume by virtue of the functions, dimensions and characteristics of a toy that it is intended for use by children of the stated age group. Therefore, for the purpose of this European Standard, e.g. *soft-filled toys* with simple features intended for holding and cuddling are considered as toys intended for children under 36 months.

NOTE Information relating to the age grading of toys and, in particular, which toys are intended for children under 36 months and which toys are not, can be found in CEN Report CR 14379, the Consumer Product Safety Commission (CPSC) Age determination guidelines, CEN/CENELEC Guide 11 and the European Commission’s Guidance Documents.

This European Standard also specifies requirements for *packaging*, marking and labelling.

This European Standard does not cover musical instruments, sports equipment or similar items but does include their toy counterparts.

This European Standard does not apply to the following toys:

— playground equipment intended for public use;

— automatic playing machines, whether coin operated or not, intended for public use;

— toy vehicles equipped with combustion engines (see A.2);

— toy steam engines;

— slings and catapults.

Items that are propelled into free flight by a child releasing an elastic band (e.g. aeroplanes and rockets) are considered as catapults (see 5th indent above).

This European Standard does not cover electrical safety aspects of toys. These are covered by EN 62115.

Furthermore, it does not cover the following items which, for the purpose of this European Standard, are not considered as toys:

— decorative objects for festivities and celebrations;

— products for collectors, provided that the product or its *packaging* bears a visible and legible indication that it is intended for collectors of 14 years of age and above. Examples of this category are:

  — detailed and faithful scale models (see A.2);

  — kits for the assembly of detailed scale models;

  - folk dolls and decorative dolls and other similar articles;
  - historical replicas of toys;
  - reproductions of real fire arms;
- sports equipment including roller skates, inline skates, and skateboards intended for children with a body mass of more than 20 kg;
- bicycles with a *maximum saddle height* of more than 435 mm, measured as the vertical distance from the ground to the top of the seat surface, with the seat in a horizontal position and with the seat pillar set to the minimum insertion mark;
- *scooters a*nd other means of transport designed for sport or which are intended to be used for travel on public roads or public pathways;
- electrically driven vehicles which are intended to be used for travel on public roads, public pathways, or the pavement thereof;
- aquatic equipment intended to be used in deep water, and swimming learning devices for children, such as swim seats and swimming aids;
- puzzles with more than 500 pieces;
- guns and pistols using compressed gas, with the exception of water guns and water pistols;
- bows for archery over 120 cm long;
- fireworks, including percussion caps which are not specifically designed for toys;
- products and games using sharp-pointed missiles, such as sets of darts with metallic points;
- functional educational products, such as electric ovens, irons or other *functional products*, as defined in 2009/48/EC, operated at a nominal voltage exceeding 24 V which are sold exclusively for teaching purposes under adult supervision;
- products intended for use for educational purposes in schools and other pedagogical contexts under the surveillance of an adult instructor, such as science equipment;
- electronic equipment, such as personal computers and game consoles, used to access interactive software and their associated peripherals, unless the electronic equipment or the associated peripherals are specifically designed for and targeted at children and have a play value on their own, such as specially designed personal computers, key boards, joy sticks or steering wheels;
- interactive software, intended for leisure and entertainment, such as computer games, and their storage media, such as CDs;
- babies' soothers;
- child-appealing luminaires;
- electrical transformers for toys;
- fashion accessories for children which are not for use in play (see A.2);

— personal protective equipment, including flotation aids such as arm bands and swim seats (see A.23); and swimming goggles, sunglasses and other eye protectors as well as bicycle and skateboard helmets (see A.19).

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.

EN 71-8, *Safety of toys — Part 8: Swings, slides and similar activity toys for indoor and outdoor family domestic use*

EN 15649-3, *Floating leisure articles for use on and in the water — Part 3: Additional specific safety requirements and test methods for Class A devices*

EN 60318-1, *Electroacoustics — Simulators of human head and ear — Part 1: Ear simulator for the measurement of supra-aural and circumaural earphones (IEC 60318-1:2009)*

EN 60318-5, *Electroacoustics — Simulators of human head and ear — Part 5: 2 cm^3 coupler for the measurement of hearing aids and earphones coupled to the ear by means of ear inserts (IEC 60318-5:2006)*

EN 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications (IEC 61672-1:2002)*

EN 61672-2, *Electroacoustics — Sound level meters — Part 2: Pattern evaluation tests (IEC 61672-2:2003)*

EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 3746:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane (ISO 3746:2010)*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287:1997)*

EN ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T) (ISO 6508-1:2005)*

EN ISO 11201, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections (ISO 11201:2010)*

EN ISO 11202, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections (ISO 11202:2010)*

EN ISO 11204, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying accurate environmental corrections (ISO 11204:2010)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

ISO 7619-2, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 2: IRHD pocket meter method*

3 Terms and definitions

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

3.1
accessible
contactable under the test conditions of 8.10 (accessibility of a part or component)

3.2
aquatic toy
toy, whether inflatable or not, intended for use in shallow water and which is capable of carrying or supporting a child on the water

3.3
asphyxiation
insufficient supply of air to the airways

NOTE Insufficient supply of air could be caused e.g. by closing off the flow of air as a result of *choking* or *suffocation* or by entrapment in an unventilated, confined space.

3.4
backing
material adhering to flexible *plastic sheeting*

3.5
ball
spherical, ovoid or ellipsoidal object, usually but not always designed or intended to be thrown, hit, kicked, rolled, dropped or bounced

NOTE The term *ball* also includes any multisided object formed by at least 48 connecting planes into a generally spherical, ovoid or ellipsoidal shape.

3.6
burr
roughness, caused by not cleanly severing or finishing the material

3.7
chain
connected series of links or rings

3.8
choking
closing off the flow of air as a result of internal *asphyxiation*

NOTE *Choking* can, for example, be caused by inhalation of an object, by an object becoming wedged in the mouth or pharynx, or by an object becoming lodged over the entrance to the lower airways.

3.9
close-to-the-ear toy
toy that is clearly designed to emit sound, intended to be used close to the ear, i.e. a hypothetical position, normally 2,5 cm from the nearest sound emitting part of the toy that can be put against the ear of a child (e.g. telephones that ring or beep in the ear piece and toys with earphones)

3.10
collapse
sudden or unexpected folding of a structure

3.11
cord
length of flexible textile or non-textile material including *elastic material*, monofilament polymeric material, *tape*, *ribbon*, rope, *strap*, woven and twisted material and string as well as certain weak and long *springs*

NOTE *Electrical cables* in toys are not considered to be *cords*.

3.12
crack
fracture of a material to the full thickness of the material

3.13
crushing
injury to part of the body resulting from compression between two surfaces

3.14
driving mechanism
assembly of linked parts of a toy, at least one of which moves and is driven either electrically, by clockwork or by other mechanical means and including gears, belts and winding mechanisms

3.15
edge
line formed at the junction of two surfaces, the length of which exceeds 2,0 mm

3.16
elastic material
material or item that is stretchable when subjected to an external force and which is able to recover or nearly recover its original length or shape when the force is removed

3.17
electrical cable
flexible insulated conductor used for connecting a toy to a supply of electricity or to a piece of electronic equipment which is not itself a toy or part of a toy

NOTE Electronic equipment includes computers and television sets which do not have a play value on their own.

3.18
expanding material
material, the volume of which expands when exposed to water

3.19
fastening
mechanical device which attaches two or more components of a toy together (e.g. a screw)

3.20
filling
material intended to be wholly contained within a *soft-filled toy* or within *soft-filled* parts of a toy

3.21
fixed drive
transmission without *free-wheeling mechanism*

NOTE In a *fixed drive* the drive mechanism cannot be disengaged from the driven shaft. An example is a bicycle where the pedals are driven by the rear wheel when the bicycle is going downhill.