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Safety of toys - Part 1: Mechanical and physical properties - Amendment 2: Acoustics

Sicherheit von Spielzeug - Teil 1: Mechanische und physikalische Eigenschaften

Sécurité des jouets - Partie 1: Propriétés mécaniques et physiques - Amendement 2: Acoustique

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ICS:

97.200.50	Igrače	Toys

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EUROPEAN STANDARD

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English Version

Safety of toys - Part 1: Mechanical and physical properties - Amendment 2: Acoustics

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Sicherheit von Spielzeug - Teil 1: Mechanische und physikalische Eigenschaften

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 52.

This draft amendment A2, if approved, will modify the European Standard EN 71-1:2011. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 71-1:2011/prA2:2012) has been prepared by Technical Committee CEN/TC 52 “Safety of toys”, the secretariat of which is held by DS.

This document is currently submitted to the CEN Enquiry.

This document 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.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

2 Normative references

INTRODUCE THE FOLLOWING REFERENCES AND, WHEN APPLICABLE, DELETE EXISTING CONFLICTING REFERENCES

EN ISO 3744, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

EN ISO 3745, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Precision methods for anechoic rooms and hemi-anechoic rooms using an enveloping measurement surface over a reflecting plane*

EN ISO 3746, *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*

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*

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 50332-1, *Sound system equipment: Headphones and earphones associated with portable audio equipment – Maximum sound pressure level measurement methodology and limit considerations – Part 1: General method for “one package equipment”*

EN 60065/A12, *Audio, video and similar electronic apparatus – Safety requirements. Amendment A12:2011*

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

IEC/TS 60318-7, *Electroacoustics - Simulators of human head and ear - Part 7: Head and torso simulator for acoustic measurement of hearing aids (IEC/TS 60318-7:2011)*

EN 60950/A12, *Information technology equipment – Safety – Part 1: General requirements. Amendment A12:2011*

EN 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

3 Terms and definitions

REPLACE THE FOLLOWING EXISTING DEFINITIONS

3.9
close-to-the-ear toy
toy designed to emit sound, intended to be used within 2,5 cm of the ear (examples of close-to–the-ear toys are: toy telephones or similar toys; toy rifles with a loudspeaker in the stock)

3.29
hand-held toy
toy designed to emit sound, intended to be held in the hand (e.g. clicking toys, toy tools, musical toys and cap-firing toys) but excluding *close-to-the-ear toys*

3.43
rattle
toy, intended for children who are too young to sit up unaided, that is clearly designed to emit sound when shaken or activated by the child or another person

3.49
squeeze toy
pliable toy, intended for children who are too young to sit up unaided, incorporating a sound-making feature activated by forcing air through an opening, designed to emit sound when flexed or squeezed by the child or another person

3.53
table-top or floor toy
toy designed to emit sound, intended to be used on a table or floor or another large surface (examples include toy cars, mechanical animals, large and bulky toys)

INTRODUCE THE FOLLOWING NEW DEFINTIONS

3.62
child actuated toy
toy designed to emit sound when actuated by the muscular action of the child, and where the sound level depends on the force of the muscular action, and which is not covered by any other definition of toys designed to emit sound (examples include toy drums, toy bells and toy xylophones)

3.63
mouth actuated toy designed to emit sound
toy designed to emit sound when actuated by the blowing action of the child (examples include toy trumpets and toy whistles)

3.64
pull-along or push toy
toy designed to emit sound only when moving and intended to be operated by the child (or other person) pulling it by a cord or pushing it by means of a rigid extension (examples include toys making mechanically excited sound when the axles/wheels are rotating)

3.65
voice actuated toy
toy designed to emit sound when actuated by the voice and where the output sound level depends on the input sound level of the voice (examples include telephones, walkie-talkies and voice recording toys)

3.66
self-propelled toy
toy designed to make sound and to be able to move independent of muscular power (e.g. wind up or battery operated toy)

3.67
emission sound pressure level
sound pressure level at a specified position near a noise source, when the source is in operation under specified operating and mounting conditions on or above a reflecting plane surface, excluding the effects of background noise as well as the effects of reflections other than those from the plane or planes permitted for the purpose of the test

3.68
time-averaged sound pressure level
ten times the logarithm to the base 10 of the ratio of the square of the root-mean-square sound pressure over a stated time interval to the square of the reference sound pressure, the sound pressure being obtained with a standard frequency weighting

Note 1 to entry: When used for determining the noise emission from machinery and other equipment time-averaged sound pressure level are denoted L_{pA}. In other contexts it is also denoted equivalent continuous sound pressure level with the notation L_{Aeq}.

REPLACE THE EXISTING 4.20 WITH THE FOLLOWING

4.20 Acoustics (See A.25)

The requirements in 4.20 do not apply to Personal Music Players supplied with earphones or headphones which are dealt with in EN 60065:2002/A12 and EN 60950-1:2006/A12 respectively.

For evaluation of exposure from equivalent continuous sound, toys designed to emit sound are divided into the following 3 sound categories:

Sound category 1: Toys emitting sound during time periods typically longer than 30 s after each initiation by the child or an adult;

Sound category 2: a) Toys emitting sound during time periods typically shorter than 30 s after each initiation by the child or by an adult and, b) *self-propelled toys*. Typical toys in this category are *rattles*, *squeeze toys* and *pull-along or push toys*

Sound category 3: Toys emitting sound during time periods typically shorter than 5 s after each initiation by the child or an adult and where each initiation requires such a significant physical effort, or that the toy for other reasons, is unlikely to be in operation with respect to sound more than about 10 % of the total time of use of the toy. Typical toys in this category are *mouth actuated toys designed to emit sound* like whistles and horns and electronic toy guns.

When in doubt use nearest strictest (=lowest number) category.

For evaluation of exposure from peak sound pressure levels some toys designed to emit sound are allocated the following sound category:

Sound category 4: Toys designed and actuated in such a way that it is virtually impossible for a person to get his ear as close as 2,5 cm from the main sound radiating part of the toy. There are very few typical toys in this category but two of those are toy drums and toy xylophones.

When tested according to 8.28 (determination of emission sound pressure levels), toys which are designed to emit sound shall conform to the following requirements:

a) The A-weighted *emission sound pressure level*, L_{pA}, produced at the specified position at 50 cm by *close-to-the-ear toys* shall not exceed 60 dB when measured in a free field.

b) The A-weighted *emission sound pressure level*, L_{pA}, produced at the specified position at 50 cm by toys that can be confused with *close-to-the-ear toys* shall not exceed 60 dB when measured in a free field. Such toys weigh typically less than 500 g, and have a shape and construction making it easy to confuse

them with typical *close-to-the-ear toys* like telephones. They also typically emit sound with duration longer than 20 s after each initiation.

c) The A-weighted *emission sound pressure level*, L_{pA}, produced at the specified position at 50 cm by any toy shall not exceed 80 dB for sound category 1 toys, 85 dB for sound category 2 toys and 90 dB for sound category 3 toys.

d) The C-weighted peak *emission sound pressure level*, L_{pCpeak}, produced at the specified position at 50 cm by any toy other than category 4 toys shall not exceed 110 dB. For category 4 toys the limit value is L_{pCpeak}= 125 dB.

e) The A-weighted *emission sound pressure level*, L_{pA}, produced by toys using headphones or earphones shall not exceed 85 dB when measured in an ear simulator and corrected to an equivalent free field sound pressure level.

An overview of the requirements is given in Table X.

Table X: Overview of requirements on highest permissible sound pressure levels for toys designed to emit sound

Type of toy	L_{pA} at 50 cm	L_{pCpeak} at 50 cm	L_{pA} in a free field	L_{pCpeak} in a free field
1) *Close-to-the-ear toys*	60 dB	110 dB		
2) Toys easily confused with *close-to-the-ear toys*	60 dB	110 dB		
3) Category 1 toys	80 dB	110 dB		
4) Category 2 toys	85 dB	110 dB		
5) Category 3 toys	90 dB	110 dB		
6) Head-/ear-phone toys			85 dB	135 dB
7) Category 4 toys	90 dB	125 dB		

NOTE The sound pressure levels in a free field are calculated from measurements in an ear coupler. The sound pressure levels at 2,5 cm are approximately equal to the sound pressure levels at 50 cm + 25 dB (rounded number, nominally the difference for a point source is 26 dB).

REPLACE THE EXISTING 8.28 WTIH THE FOLLOWING

8.28 Determination of emission sound pressure levels (See 4.20)

8.28.1 Principle

The principle is to determine the sound pressure level as it would be in an environment excluding all reflections from walls and ceiling. The operating condition shall be the one yielding the highest A-weighted equivalent continuous sound pressure level and the highest C-weighted peak sound pressure level respectively and the microphone position shall be the one out of a specified set of positions yielding the highest sound pressure level.

8.28.2 Installation and mounting conditions

8.28.2.1 General

Measure on a new toy. Test battery toys using new primary batteries or fully charged secondary batteries. If a mains adapter is normally provided by the toy manufacturer, this may be used in place of batteries.

NOTE External power supplies, not supplied by the toy manufacturer, shall not be used as they will, in many cases, affect the performance of the toy.

8.28.2.2 Test environment

Any environment which meets the qualification requirements of EN ISO 11201 or EN ISO 11202, see figure XX. Estimate or measure the equivalent sound absorption area in the test room according to Annex A in EN ISO 3744 or EN ISO 3746. Use figure XX to estimate the environmental correction K_{2A} or K_{3A} and make sure that it is within the limits given in table YY.

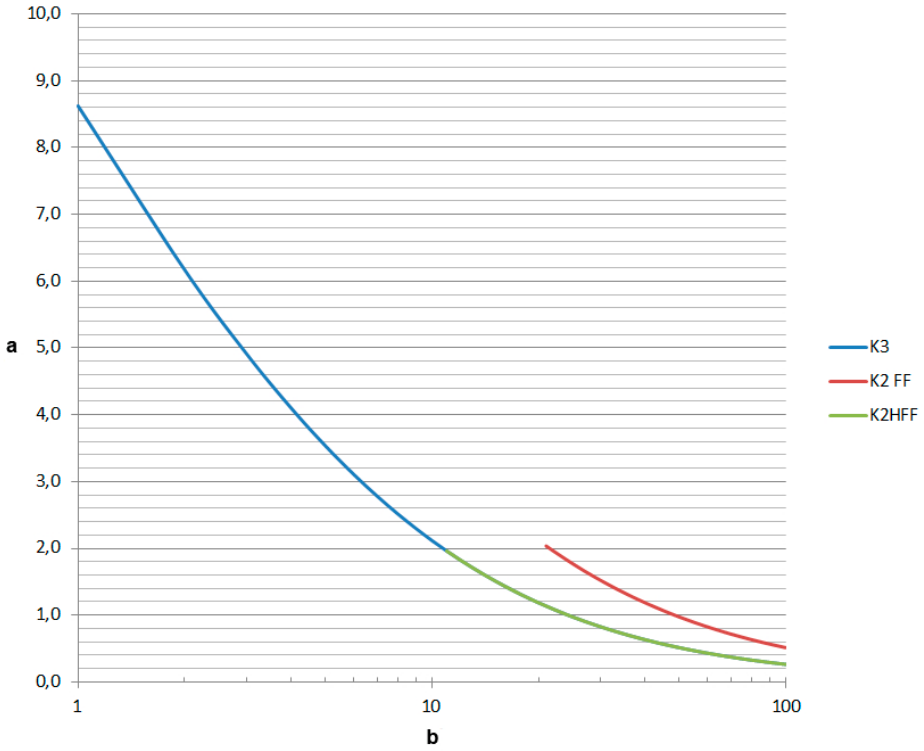

Figure XX — Environmental correction K_{3A} (K3) according to EN ISO 11202 and environmental correction K_{2A} for free field (K2FF) and for free field above a reflecting plane (K2HFF) according to EN ISO 3746 as a function of the equivalent sound absorption area of the test environment.

Table YY — Maximum achievable accuracy for different test environments

Standard	Grade of accuracy	Requirement
EN ISO 11201	Grade 1 (Precision)	See EN ISO 3745
EN ISO 11201	Grade 2 (Engineering)	$K_{2A} \leq 2{,}0$ dB
EN ISO 11202	Grade 2 (Engineering)	$K_{3A} \leq 4$ dB