

## საქართველოს სტანდარტი

---

სათამაშოების უსაფრთხოება- ნაწილი 3: გარკვეული კომპონენტების  
გადაადგილება

საქართველოს სტანდარტებისა და მეტროლოგიის  
ეროვნული სააგენტო  
თბილისი

**სსტ ენ 71-3:2019/2019**

**საინფორმაციო მონაცემები**

**1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ**

**2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 20 დეკემბრის № 102 განკარგულებით**

**3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 71-3:2019 “სათამაშოების უსაფრთხოება- ნაწილი 3: გარკვეული კომპონენტების გადაადგილება”**

**4 პირველად**

**5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 20 დეკემბერი №268-1.3-016745**

**დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე**

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 71-3

April 2019

ICS 97.200.50

Supersedes EN 71-3:2013+A3:2018

English Version

## Safety of toys - Part 3: Migration of certain elements

Sécurité des jouets - Partie 3: Migration de certains éléments

Sicherheit von Spielzeug - Teil 3: Migration bestimmter Elemente

This European Standard was approved by CEN on 8 April 2019.

CEN 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 CEN-CENELEC Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
<b>European foreword.....</b>	<b>5</b>
<b>Introduction .....</b>	<b>7</b>
<b>1 Scope.....</b>	<b>8</b>
<b>2 Normative references.....</b>	<b>8</b>
<b>3 Terms and definitions .....</b>	<b>8</b>
<b>4 Requirements .....</b>	<b>9</b>
<b>5 Principle .....</b>	<b>11</b>
<b>6 Reagents and apparatus .....</b>	<b>12</b>
<b>7 Sampling and sample preparation.....</b>	<b>12</b>
<b>8 Migration methodology .....</b>	<b>16</b>
<b>9 Stabilization and analysis of migration solutions .....</b>	<b>19</b>
<b>10 Calculation of results .....</b>	<b>20</b>
<b>11 Method performance .....</b>	<b>21</b>
<b>12 Test report.....</b>	<b>24</b>
<b>Annex A (informative) Significant technical changes between this document and the previous version.....</b>	<b>25</b>
<b>Annex B (informative) Information on method validation.....</b>	<b>26</b>
<b>B.1 General.....</b>	<b>26</b>
<b>B.2 Samples of interlaboratory comparison.....</b>	<b>26</b>
<b>B.3 Selection of material category/element combinations.....</b>	<b>27</b>
<b>Annex C (informative) Estimation of reproducibility .....</b>	<b>28</b>
<b>Annex D (informative) Toy material visual particle size comparison materials .....</b>	<b>30</b>
<b>Annex E (normative) Method of analysis for general elements .....</b>	<b>32</b>
<b>E.1 Principle .....</b>	<b>32</b>
<b>E.2 Working solutions.....</b>	<b>32</b>
<b>E.2.1 Stock solution (<math>M_1</math>) .....</b>	<b>32</b>
<b>E.2.2 Diluted stock solution (<math>M_2</math>).....</b>	<b>33</b>
<b>E.2.3 Working solutions.....</b>	<b>33</b>
<b>E.2.4 Internal standard stock solution .....</b>	<b>33</b>
<b>E.3 Procedure.....</b>	<b>33</b>
<b>E.4 Analysis.....</b>	<b>33</b>
<b>E.5 Calculation .....</b>	<b>34</b>
<b>E.5.1 Calibration curve.....</b>	<b>34</b>

<b>E.5.2 Calculation of migration.....</b>	<b>34</b>
<b>Annex F (normative) Method of analysis for Chromium (VI) .....</b>	<b>35</b>
<b>F.1 Principle.....</b>	<b>35</b>
<b>F.2 Reagents.....</b>	<b>35</b>
<b>F.3 Apparatus .....</b>	<b>36</b>
<b>F.4 Procedure .....</b>	<b>37</b>
<b>F.5 Analysis .....</b>	<b>37</b>
<b>F.5.1 General .....</b>	<b>37</b>
<b>F.5.2 Chromatographic conditions.....</b>	<b>37</b>
<b>F.5.3 Limit of detection and quantification.....</b>	<b>38</b>
<b>F.5.3.1 General .....</b>	<b>38</b>
<b>F.5.3.2 Example of chromatogram .....</b>	<b>38</b>
<b>F.6 Calculation.....</b>	<b>38</b>
<b>F.6.1 Calibration curve .....</b>	<b>38</b>
<b>F.6.2 Calculation of migration.....</b>	<b>39</b>
<b>Annex G (normative) Method of analysis for organic tin (see H.9) .....</b>	<b>40</b>
<b>G.1 Principle.....</b>	<b>40</b>
<b>G.2 Reagents.....</b>	<b>41</b>
<b>G.3 Apparatus .....</b>	<b>44</b>
<b>G.4 Procedure .....</b>	<b>44</b>
<b>G.4.1 Sample derivatisation .....</b>	<b>44</b>
<b>G.4.1.1 Derivatisation .....</b>	<b>44</b>
<b>G.4.1.2 Category I and III materials.....</b>	<b>45</b>
<b>G.4.1.3 Category II materials .....</b>	<b>45</b>
<b>G.4.1.4 Standard addition method .....</b>	<b>45</b>
<b>G.4.2 Calibration standards .....</b>	<b>46</b>
<b>G.5 Analysis .....</b>	<b>46</b>
<b>G.5.1 General .....</b>	<b>46</b>
<b>G.5.2 Example of GC conditions .....</b>	<b>48</b>
<b>G.5.3 Example of MS conditions.....</b>	<b>48</b>
<b>G.5.4 Limit of detection and quantification.....</b>	<b>48</b>
<b>G.5.5 Example of a GC-MS chromatogram .....</b>	<b>49</b>
<b>G.6 Calculation.....</b>	<b>50</b>
<b>G.6.1 Calibration curve .....</b>	<b>50</b>
<b>G.6.2 Standard addition.....</b>	<b>50</b>
<b>G.6.3 Calculation of migration of organic tin .....</b>	<b>50</b>

<b>Annex H (informative) Rationale.....</b>	<b>52</b>
<b>H.1 General.....</b>	<b>52</b>
<b>H.2 Mouthing behaviour of children (see Clause 1) .....</b>	<b>52</b>
<b>H.3 Skin contact (see Clause 1) .....</b>	<b>53</b>
<b>H.4 Toy categories (see 4.1) .....</b>	<b>53</b>
<b>H.5 Test portions (see Clause 7) .....</b>	<b>53</b>
<b>H.6 Size of test pieces (see 7.2) .....</b>	<b>53</b>
<b>H.7 Stability of Chromium (VI) in the migration solution (see 9.3).....</b>	<b>54</b>
<b>H.8 Filtration of migration solutions (see 8.3.2) .....</b>	<b>54</b>
<b>H.9 Organic tin (see Annex G).....</b>	<b>54</b>
<b>H.10 pH value (see 8.2 and 8.3.1.2).....</b>	<b>56</b>
<b>H.11 De-waxing (see 7.2.3) .....</b>	<b>56</b>
<b>Annex ZA (informative) Relationship between this European Standard and the essential requirements of EU Directive 2009/48/EC aimed to be covered.....</b>	<b>57</b>
<b>Bibliography.....</b>	<b>58</b>

## European foreword

This document (EN 71-3:2019) 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 October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

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

This document supersedes EN 71-3:2013+A3:2018.

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 2009/48/EC.

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

The significant changes from the previous edition of this standard are detailed in Annex A.

EN 71, *Safety of toys*, consists of the following parts:

- *Part 1: Mechanical and physical properties;*
- *Part 2: Flammability;*
- *Part 3: Migration of certain elements (this document);*
- *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;*
- *Part 12: N-Nitrosamines and N-nitrosatable substances;*
- *Part 13: Olfactory board games, cosmetic kits and gustative games;*
- *Part 14: Trampolines for domestic use.*

NOTE 1 In addition to the above parts of EN 71, the following guidance documents have been published: CEN/TR 15071, *Safety of toys — National translations of warnings and instructions for use in EN 71*, and CEN/TR 15371 (all parts), *Safety of toys — Interpretations*.

NOTE 2 Words in *italics* are defined in Clause 3 (Terms and definitions).

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

საინფორმაციო ნაშროვი. სრული გექნების დანართის დაცვისთვის დანართის გენერატორი.

## Introduction

The Toy Safety Directive (2009/48/EC) [1] specifies maximum migration limits for three categories of *toy materials*. Certain limit values have been amended (see [4, 5, 6, 7]). The limits for the migration of certain elements are expressed in milligram per kilogram *toy material* and are detailed in Table 2. The purpose of the limits is to minimize children's exposure to certain potentially toxic elements.