INTERNATIONAL STANDARD

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Safety of toys —

Part 3: Migration of certain elements

Sécurité des jouets —

Partie 3: Migration de certains éléments

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 8124-3 was prepared by Technical Committee ISO/TC 181, *Safety of toys*.

This second edition cancels and replaces the first edition (ISO 8124-3:1997) which has been technically revised.

ISO 8124 consists of the following parts, under the general title *Safety of toys.*

- *Part 1: Safety aspects related to mechanical and physical properties*
- *Part 2: Flammability*
- *Part 3: Migration of certain elements*
- *Part 4: Swings, slides and similar activity toys for indoor and outdoor family domestic use*

Introduction

The requirements of this part of ISO 8124 are based on the bioavailability of certain elements resulting from the use of toys and should not, as an objective, exceed the following levels per day:

- 0,2 µg for antimony;
- 0,1 µg for arsenic;
- 25,0 µg for barium;
- 0,6 µg for cadmium;
- 0,3 µg for chromium;
- 0,7 µg for lead;
- 0,5 µg for mercury;
- 5,0 µg for selenium.

For the interpretation of these values, it has been necessary to identify an upper limit for the ingestion of toy material. Very limited data have been available for identifying this upper limit. As a working hypothesis, a summed average daily intake of the various toy materials has been gauged at the currently accepted value of 8 mg/d, being aware that in certain individual cases these values might be exceeded.

By combining the daily intake with the bioavailability values listed above, limits are obtained for various toxic elements in micrograms per gram of toy material (milligrams per kilogram) and are detailed in Table 1. The values obtained have been adjusted to minimize children's exposure to toxic elements in toys and to ensure analytical feasibility, taking into account limits achievable under current manufacturing conditions (see Annex C).

Safety of toys —

Part 3:
Migration of certain elements

1 Scope

1.1 This part of ISO 8124 specifies maximum acceptable levels and methods of sampling and extraction prior to analysis for the migration of the elements antimony, arsenic, barium, cadmium, chromium, lead, mercury and selenium from toy materials and from parts of toys.

1.2 Maximum acceptable levels are specified for the migration of the elements listed in 1.1 from the following toy materials:

- coatings of paints, varnishes, lacquers, printing inks, polymers and similar coatings (see 8.1);
- polymeric and similar materials, including laminates, whether textile-reinforced or not, but excluding other textiles and non-woven textiles (see 8.2);
- paper and paperboard, up to a maximum mass per unit area of 400 g/m^2 (see 8.3);
- natural, artificial or synthetic textiles (see 8.4);
- glass/ceramic/metallic materials, excepting lead solder when used for electrical connections (see 8.5);
- other materials, whether mass-coloured or not (e.g. wood, fibreboard, hardboard, bone and leather) (see 8.6);
- materials intended to leave a trace (e.g. the graphite materials in pencils and liquid ink in pens) (see 8.7);
- pliable modelling materials, including modelling clays and gels (see 8.8);
- paints to be used as such in the toy, including finger paints, varnishes, lacquers, glazing powders and similar materials in solid or liquid form (see 8.9).

1.3 The requirements in this part of ISO 8124 apply to the following toys and toy components of toys and toy materials (see C.2.1):

- all intended food and oral contact toys, cosmetic toys and writing instruments categorized as toys, irrespective of any age grading or recommended age labelling;
- all toys intended for or suitable for children up to 72 months of age;
- accessible coatings, irrespective of any age grading or recommended age labelling;
- accessible liquids, pastes, gels (e.g. liquid paints, modelling compounds), irrespective of any age grading or recommended age labelling.

1.4 Packaging materials are not included, unless they are intended to be kept, e.g. boxes, containers, or unless they form part of the toy or have intended play value (see C.2.2).

NOTE No requirements are given for toys and parts of toys which, due to their accessibility, function, mass, size or other characteristics, are obviously unlikely to be sucked, licked or swallowed, bearing in mind the normal and foreseeable behaviour of children (e.g. the coating on the crossbeam of a swing set, the tyres of a toy bicycle).

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.

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

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

3 Terms and definitions

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

3.1
base material
material upon which coatings may be formed or deposited

3.2
coating
all layers of material formed or deposited on the base material of a toy, including paints, varnishes, lacquers, inks, polymers or other substances of a similar nature, whether they contain metallic particles or not, no matter how they have been applied to the toy, and which can be removed by scraping with a sharp blade

3.3
detection limit of a method
three times the standard deviation of the result obtained in the blank test using that method by the laboratory carrying out the analysis

3.4
mass-coloured materials
materials, such as wood, fibreboard, hardboard, leather, bone and other porous substances, which have absorbed colouring matter without formation of a coating

3.5
paper and paperboard
that having a maximum mass per unit area of 400 g/m^2

NOTE Above this mass per unit area, the substance is treated as “other material”, and may be fibreboard or hardboard, etc.

3.6
scraping
mechanical process for removal of coatings down to the base material

3.7
toy material
all accessible materials present in a toy