



**SLOVENSKI STANDARD**  
**SIST EN 71-4:1995**  
**01-november-1995**

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Safety of toys - Part 4: Experimental sets for chemistry and related activities

Sicherheit von Spielzeug - Teil 4: Experimentierkästen für chemische und ähnliche Versuche

Sécurité des jouets - Partie 4: Coffrets d'expériences chimiques et d'activités connexes

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**ICS:**

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EUROPEAN STANDARD

EN 71  
Part 4

NORME EUROPEENNE

EUROPAISCHE NORM

May 1990

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English version

**Safety of toys - Part 4: Experimental sets for chemistry and related activities**

Sécurité des jouets - Partie 4:  
Coffrets d'expériences chimiques et  
d'activités connexes

Sicherheit von Spielzeug - Teil 4:  
Experimentierkästen für chemische und  
ähnliche Versuche

This European Standard was accepted by CEN on 1990-05-29. CEN members are bound to comply with the requirements of the CEN/CENELEC Common Rules 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 Central Secretariat 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 CEN Central Secretariat has the same status as the official versions.

CEN members are the national standards organizations of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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## B R I E F H I S T O R Y

The Commission of the European Communities (CEC) informed in March 1985 the CEN Technical Board (CEN BT) of the activities of the Commission concerning the preparation of a new proposal for an EEC-directive within the field of safety of toys (now published as Council Directive 88/378/EEC of 3 May 1988).

On 1988-05-18 the Commission submitted a draft standardization request to CEN. This request charges CEN with the preparation of a European Standard on maximum concentration limits in chemical toys for dangerous substances and preparations as defined in directives 67/548/EEC and 88/379/EEC, essential to the functioning of chemical toys.

The draft standardization request was accepted by CEN BT on 1988-06-16--17 (resolution BT 86/1988).

A parallel draft EFTA standardization request was submitted from EFTA on 1988-09-23.

On 1988-06-08 CEN/TC 52 set up a working group CEN/TC 52/WG 5. The task of the working group was to prepare two final working drafts covering the mandate.

The working group, WG 5, convened in November 1988 in Berlin, in March 1989 in Salzburg and in October 1989 in Brussels.

The revised third working draft, as prepared during the meeting in Salzburg, was approved on 1989-03-16 by CEN/TC 52 for submission as a draft European Standard for enquiry. A revised draft European Standard, as prepared during the meeting of WG 5 in Brussels, was approved on 1989-10-17.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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## FOREWORD

This European Standard 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

This standard is Part 4 of the European Standard for safety of toys.

This Part 4 should be read in conjunction with Part 1, particularly the foreword and clauses 1 and 2 of Part 1.

It is intended to reduce the risks which may present health hazards to a child when the experimental sets are used as intended or in a foreseeable way, bearing in mind the normal behaviour of children.

When using these experimental sets, the possible dangers should be kept to a minimum, by adding appropriate information to make the experiment recognized and controllable.

Requirements are laid down in this standard. Differing legal requirements, e.g. for classification of dangerous substances, Risk/Safety phrases, labelling and limits for substances, exist in EFTA-countries.

Technical rules for inclusion and exclusion of substances in table 1 are in preparation and will be added to this standard at the earliest opportunity.

## 1 OBJECT

This Part of this European Standard specifies requirements for the maximum amount of certain substances and preparations used in experimental sets for chemistry and related activities.

The standard applies to chemistry sets and supplementary sets. It also covers toys for experiments within the fields of mineralogy, biology, physics, microscopies and environmental sciences whenever they contain one or more chemical substances and/or preparations.

It also specifies requirements for marking, contents list, instructions for use and for equipment intended for carrying out the experiments.

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## 2 FIELD OF APPLICATION

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See Part 1 of this European Standard.

This Part includes requirements for:

- the maximum amounts of substances and preparations classified as dangerous within the definitions contained in Directives 67/548/EEC (with subsequent amendments and adaptations) and 88/379/EEC (with subsequent amendments and adaptations); and
- the maximum amounts of substances and preparations which in excessive amounts may harm the health of the children using them and which are not covered by the above mentioned Directives; and
- the maximum amounts of any other chemical substances delivered with the toy.

### 3 REFERENCES

EN 71-1:1988 Safety of toys. Part 1: Mechanical and physical properties.

European Council Directive 67/548/EEC - Classification, packaging and labelling of dangerous substances (with subsequent amendments and adaptations).<sup>1)</sup>

European Council Directive 88/379/EEC - Classification, packaging and labelling of dangerous preparations (with subsequent amendments and adaptations).<sup>2)</sup>

### 4 DEFINITIONS

For the purpose of this Part of EN 71 the following definitions apply:

4.1 Chemistry set: A toy consisting of one or more chemical substances and/or preparations with or without equipment intended for carrying out chemical experiments.

#### NOTE

The definition also covers toys for experiments within the fields of mineralogy, biology, physics, microscopics and environmental sciences whenever they contain one or more chemical substances and/or preparations.

4.2 Supplementary set: A chemistry set which is intended to be used with a complete chemistry set.

### 5 CHEMICAL SUBSTANCES

Only substances and preparations given in table 1 can be supplied in chemistry sets up to the amounts stated.

#### NOTE

The quality of the chemicals used should be appropriate for the experiments described. In particular the chemicals should not contain impurities or blends which allow undefined and dangerous reactions.

Other substances shall not be supplied with the toy. However, the instructions for use may prescribe the use of other substances, e.g. sugar, that are not considered as dangerous substances or preparations within the definitions contained in Directives 67/548/EEC (with subsequent amendments and adaptations) and 88/379/EEC (with subsequent amendments and adaptations).

Additionally, denatured methylated spirits and the reagents referred to in table 2 may be prescribed for use, but shall not be provided with the toy.

The chemical substances and preparations listed in table 1, in so far as they are classified as dangerous within the definitions contained in the above Directives, shall have their containers labelled accordingly.

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- 1) At present the following amendments and adaptations exist: 69/81/EEC, 70/89/EEC, 71/144/EEC, 73/146/EEC, 75/409/EEC, 76/907/EEC, 79/370/EEC, 79/831/EEC, 81/957/EEC, 82/232/EEC, 83/467/EEC, 84/449/EEC, 86/431/EEC, 87/432/EEC, 88/302/EEC, 88/490/EEC.
  - 2) At present the following adaptation exists: 89/178/EEC



TABLE 1: MAXIMUM AMOUNTS OF CHEMICAL SUBSTANCES AND PREPARATIONS

Chemical substance/ preparation <sup>1)</sup>	Maximum amount per set	Danger symbol (See figure 1)	CAS number <sup>2)</sup>	EINECS <sup>2)</sup> number <sup>2)</sup>
Ammonium carbonate	5 g	Do not inhale fumes	506-87-6	2139115
Ammonium chloride	30 g	Xn	12125-02-9	2351864
Ammonium iron (III) sulfate	5 g	-	10138-04-2	2333824
Ammonium nickel (II) sulfate <sup>3)</sup>	3 g	Xn	15699-18-0	2397935
Ammonium sodium hydrogen phosphate	5 g	-	13011-54-6	2358608
Calcium carbonate	100 g	-	471-34-1	2074399
Calcium chloride	10 g	Xi	10043-52-4	2331408
Calcium hydroxide <sup>4)</sup>	20 g	C	1305-62-0	2151373
Calcium nitrate	5 g	Xi	10124-37-5	2333321
Calcium oxide <sup>4)</sup>	10 g	C	1305-78-8	2151389
Calcium sulfate	100 g	-	7778-18-9	2319003
Charcoal <sup>3)</sup>	100 g	-	16291-96-6	2403833
Citric acid	20 g	-	77-92-9	-
Clove oil <sup>3)</sup>	10 ml	-	84961-50-2	2846387
Cobalt (II) chloride hexahydrate	3 g	Xn	7791-13-1	-
Copper sheet	100 g	-	7440-50-8	2311596
Copper (II) oxide	10 g	Xn	1317-38-0	2157066
Copper (II) sulfate	15 g	Xn	7758-98-7	2318476
Disodium disulfite	10 g	Xi	7681-57-4	2315480
Glycerol (containing at least 15 % water)	25 g	-	56-81-5	2002895
Hexamethylenetetramine <sup>3)</sup> (solid fuel)	10 g	Xn	100-97-0	2029058

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Chemical substance/ preparation <sup>1)</sup>	Maximum amount per set	Danger symbol (See figure 1)	CAS number <sup>2)</sup>	EINECS number <sup>2)</sup>
INDICATORS: Eosin (solid) <sup>3)</sup> Litmus blue	1 g 1 pad or 1 roll or	-	17372-87-1	2414096
Litmus red <sup>3)</sup>	1 g 1 pad or 1 roll or	-	-	-
Methyl orange <sup>3)</sup> (20 % m/m sodium sulfate mixture)	1 g	-	1393-92-6	2157396
Methylene blue <sup>3)</sup>	3 g	-	547-58-0	2089253
Non bibulous indicator sticks - Universal indicator paper <sup>3)</sup>	1 g	Xn	61-73-4	2005152
Phenolphthalein <sup>3)</sup>	1 pad	-	-	-
Iodine (2,5 % m/V) in potassium iodide (2,5 % m/V aqueous solution)	1 g	-	77-09-8	2010047
Iodine (2,5 % m/V) in potassium iodide (2,5 % m/V aqueous solution)	10 ml	Xn	7553-56-2	2314424
Iron filings/iron powder <sup>3)</sup>	100 g	-	7439-89-6	2310964
Iron (III) chloride	10 g	Xn	7705-08-0	2317294
Iron (II) sulfate	10 g	Xn	7720-78-7	2317535
Lactose	100 g	-	63-42-3	2005592
Lead solder <sup>3)</sup>	100 g	-	-	-
Luminol (5 % m/m mixture with sodium sulfate) <sup>3)</sup>	3 g	-	521-31-3	2083094
Magnesium strip	3 g	F	7439-95-4	2311046
Magnesium sulfate	25 g	-	7487-88-9	2312982
Manganese (IV) dioxide	5 g	Xn	1313-13-9	2152026
Manganese (II) sulfate	15 g	-	7785-87-7	2320899
Pepsin	10 g	-	9001-75-6	2326293
Potassium aluminium sulfate <sup>3)</sup>	10 g	-	10043-67-1	2331413
Potassium bromide	15 g	Xn	7758-02-3	2318303
Potassium hexacyanoferrate (III) <sup>3)</sup>	10 g	-	13746-66-2	2373233
Potassium hexacyanoferrate (II) <sup>3)</sup>	10 g	-	13943-58-3	2377222

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Chemical substance/ preparation <sup>1)</sup>	Maximum amount per set	Danger symbol (See figure 1)	CAS number <sup>2)</sup>	EINECS number <sup>2)</sup>
Potassium iodide	10 g	-	7681-11-0	2316594
Potassium permanganate <sup>5)</sup>	15 g	Xn, O	7722-64-7	2317603
Potassium permanganate: sodium sulfate mixture (1:2 m/m)	10 g	Xn, O	-	-
Silver nitrate (1 % m/V aqueous solution)	10 ml	Xi	-	-
Sodium acetate	20 g	-	127-09-3	2048238
Sodium carbonate	50 g	Xi	497-19-8	2078388
Sodium chloride	100 g	-	7647-14-5	2315983
Sodium hydrogen carbonate	50 g	-	144-55-8	2056338
Sodium hydrogen sulfate	30 g	C	7681-38-1	2316657
Sodium metasilicate	30 g	Xn	6834-92-0	2299129
Sodium sulfate	100 g	-	7757-82-6	2318209
Sodium tetraborate <sup>3)</sup>	10 g	Xn	1330-43-4	2155404
Sodium thiosulfate	50 g	-	7772-98-7	2318675
Sulfur	15 g	-	7704-34-9	2317226
Tannin <sup>3)</sup>	15 g	-	1401-55-4	2157532
Tartaric acid	20 g	Xi	87-69-4	2010691
Tincture of Iodine <sup>3)</sup> (2,5 % m/V ethanolic solution)	10 ml	Xn	-	-
Urea <sup>3)</sup>	10 g	-	57-13-6	2003155
Zinc powder/zinc pellets	20 g	F	7440-66-6	2311753

- 1) The substances in table 1 are listed in alphabetical order and may therefore be placed in different positions in the national translations.
- 2) Chemical Abstract Service Registry Number (CAS) and European Inventory of Existing Chemical Substances Number (EINECS) are provided for information purposes only.
- 3) The chemical nomenclature is mainly based on IUPAC with the exceptions of the substances marked.
- 4) Only one of these substances shall be provided per set.
- 5) Only to be provided for toys for children over the age of 12 years.