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Varnost igrač - 5. del: Kemijske igrače (kompleti), razen kompletov za kemijske poskuse

Safety of toys - Part 5: Chemical toys (sets) other than experimental sets

Sicherheit von Spielzeug - Teil 5: Chemisches Spielzeug (Sets) ausgenommen Experimentierkästen

Sécurité des jouets - Partie 5 : Jouets chimiques (coffrets) autres que les coffrets d'expériences

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Safety of toys - Part 5: Chemical toys (sets) other than experimental sets

Sécurité des jouets - Partie 5 : Jouets chimiques
(coffrets) autres que les coffrets d'expériences

Sicherheit von Spielzeug - Teil 5: Chemisches Spielzeug
(Sets) ausgenommen Experimentierkästen

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

If this draft becomes a European Standard, 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.

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

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Contents	Page
European foreword	4
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 Plaster of Paris (gypsum) moulding sets	9
4.1 Marking	9
4.2 First aid information	9
4.3 Safety rules	10
5 Oven-hardening plasticised PVC modelling clay sets	10
5.1 Chemical substances	10
5.2 Marking	11
5.3 First aid information	11
5.4 Safety rules	11
6 Moulding sets	11
6.1 Polystyrene granules sets	11
6.2 Embedding sets	12
7 Adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) supplied or recommended in model sets	13
7.1 General	13
7.2 Adhesives	13
7.3 Water-based paints or lacquers	19
7.4 Solvent-based paints, lacquers, thinners and cleaning solvents	21
8 Slime kits	22
8.1 Chemical substances	22
8.2 Marking	23
8.3 First aid information	23
8.4 Safety rules	24
9 Marking	24
9.1 General	24
9.2 Marking of the primary packaging	24
9.3 Marking of individual containers and any packagings	24
10 Instructions for use	25
10.1 General	25
10.2 Contents list	25
10.3 Advice for adult supervision	25
10.4 Safety rules	26
10.5 Instructions for carrying out the activities	27
10.6 Spills and disposal of chemicals	27
11 Test methods	27
11.1 General	27

11.2	Determination of plasticisers in oven-hardening polyvinyl chloride (PVC) modelling clay sets	27
11.3	Determination of the emission of benzene, toluene and xylenes from oven-hardening plasticised PVC modelling clay sets and polystyrene granules sets.....	35
11.4	Determination of styrene content in polystyrene granules.....	39
11.5	Determination of organic solvents.....	41
11.6	Combined approach for the determination of plasticisers in solvent-based adhesives and in solvent-based paints or lacquers, film-forming agents in paints and lacquers and modifiers in solvent-based paints or lacquers	62
Annex A (normative) Environmental, health and safety precautions for using the methods of analysis.....		73
Annex B (informative) Organic solvents		74
Annex C (informative) Validation of test methods		76
Annex D (informative) Rationale		77
D.1	General remark	77
D.2	Primary packaging (4.1; 5.2; 6.1.2; 6.2.2; 7.2.1.2.2; 7.2.2.6; 7.3.2; 7.4.3; 9.2)	77
D.3	Minimum age (4.1; 5.2; 6.1.2; 6.2.3; 7.2.1.2.3; 7.2.1.3.3; 7.2.2.6; 7.3.3; 7.4.3)	78
D.4	Benzene (5.1, Table 2; 7.2.2.4, Table 11; 7.4.1, Table 15)	78
D.5	Preservatives (6.2.1; 7.2.1.1; 7.3.1)	78
D.6	Guidance on giving adequate advice for adult supervision (10.3)	78
Annex E (informative) Significant technical changes between this European Standard and the previous edition		79
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2009/48/EC aimed to be covered.....		80
Bibliography		81

prEN 71-5:2024 (E)**European foreword**

This document (prEN 71-5:2024) 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 will supersede EN 71-5:2015.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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

Annex E provides details of significant technical changes between this document and the previous edition.

This document constitutes the fifth part of the EN 71 series of standards on safety of toys.

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;*
- *Part 4: Experimental sets for chemistry and related activities;*
- *Part 5: Chemical toys (sets) other than experimental sets (this document);*
- *Part 7: Finger paints — Requirements and test methods;*
- *Part 8: Activity toys for domestic use;*
- *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;*
- *Part 15: Formamide in foam toy materials (content) (under development);*
- *Part 16: Certain chlorinated phosphorus flame retardants (TCEP, TCPP, TDCP) in toy materials (under development);*
- *Part 17: Certain isothiazolinones (MIT, CIT, BIT) in aqueous toy materials (under development);*

- *Part 18: Phenol in aqueous (content) and polymeric (migration) toy materials* (under development);
- *Part 19: Migration of bisphenol A from toy materials* (under development);
- *Part 20: Microbiological safety of toys containing accessible aqueous media* (under development).

It is up to the user of the standard to determine whether or not a toy is included in the scope of several of the above parts of the EN 71 series, and to apply each applicable standard accordingly. Normative references from one part of the EN 71 series to another, are therefore normally not provided in the individual parts.

NOTE 1 In addition to the above parts of EN 71, the following documents have been published:

- CEN/TR 15071, *Safety of toys — National translations of warnings and instructions for use in the EN 71 series*,
- CEN/TR 15371 (parts 1 and 2), *Safety of toys — Interpretations*,
- CEN/TR 16918, *Safety of toys — Children's mouthing behaviour in contact with toys*,
- CEN/TR 17695, *Safety of toys — Mechanical and physical properties — Guidance on categorisation of projectile toys within EN 71-1*,
- CEN/TS 17973, *Safety of toys — Categorization of slime type materials*, and
- CEN ISO/TR 8124-8, *Safety of toys — Part 8: Age determination guidelines*.

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

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prEN 71-5:2024 (E)**Introduction**

This document is intended to reduce the risks which can present health hazards to a child when the *chemical toys* are used as intended or in a foreseeable way, bearing in mind the behaviour of children.

When using these *chemical toys*, potential risks should be kept to a minimum by inclusion of appropriate information to give special attention to possible hazards, risks and other problems.

Chemical Abstract Service Registry Number (CAS) and European Inventory of Existing Chemical Substances Number (EINECS) given in various tables are provided for information purposes only.

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1 Scope

This document specifies requirements and test methods for toy materials (substances and mixtures) used in *chemical toys* (sets) other than *experimental sets*. These substances and mixtures are:

- those classified as dangerous by the EU legislation applying to dangerous substances and dangerous mixtures [5];
- substances and mixtures which in excessive amounts could harm the health of the children using them and which are not classified as dangerous by the above-mentioned legislation; and
- any other chemical substance(s) and mixture(s) delivered with the *chemical toy*.

NOTE The terms “substance” and “mixture” are defined in the REACH regulation No. (EC)1907/2006 and in the CLP regulation (EC) No. 1272/2008.

Additionally, requirements are specified for markings, warnings, safety rules, contents list, instructions for use and first aid information.

This document applies to:

- *plaster of Paris (gypsum) moulding sets*;
- *oven-hardening plasticised PVC modelling clay sets*;
- *polystyrene granules sets*;
- *embedding sets*;
- *adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents)*, supplied or recommended in *model sets*;
- *slime kits*.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

prEN 71-7:2024, *Safety of toys — Part 7: Finger paints — Requirements and test methods*

EN ISO 3104:2023, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:2023)*

EN ISO 3219-2:2021, *Rheology — Part 2: General principles of rotational and oscillatory rheometry (ISO 3219-2:2021)*

EN ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

EN ISO 22854:2021, *Liquid petroleum products — Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel — Multidimensional gas chromatography method (ISO 22854:2021)*

prEN 71-5:2024 (E)

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

chemical toy

toy intended for the direct handling of chemical substances and mixtures and which is used in a manner appropriate to a given age-group and under the supervision of an adult

[SOURCE: EN 71-4:2020, 3.1]

3.2

experimental set

chemical toy where the experimental and explorative character in playing with single chemical substances and mixtures along strict instructions dominates over the creative ideas of the user

[SOURCE: EN 71-4:2020, 3.2]

3.3

plaster of Paris (gypsum) moulding set

toy containing moulds into which a mixture of water and gypsum is poured and allowed to harden

Note 1 to entry: The gypsum consists predominantly of calcium sulfate hemihydrate $\text{CaSO}_4 \cdot 0,5 \text{H}_2\text{O}$.

Note 2 to entry: *Plaster of Paris (gypsum) moulding sets* are for example used for preparing figures and plates.

3.4

oven-hardening plasticised PVC modelling clay set

toy to be used for creating all kinds of figures, brooches, fashion jewellery etc. prepared by hardening in the oven at temperatures between 100 °C and 130 °C

3.5

polystyrene granules set

toy to be used in substitution of ceramic materials to create decorative articles or models by fusion of a polymer by heating in an oven up to a maximum of 180 °C

3.6

embedding set

toy to be used to preserve certain products in a transparent material

3.7

model set

product used to assemble and coat models which are supplied with or recommend *adhesives*, paints, lacquers, *varnishes*, *thinners* and *cleaning agents*

Note 1 to entry: Examples for these models are motorcars, aeroplanes, houses and ships.

3.8

adhesive

non-metallic substance capable of joining materials by surface bonding (adhesion) and the bond possessing adequate internal strength (cohesion)

3.9

water-based paint or lacquer

water based pigmented material which when applied in a liquid form to a surface, forms after a time a dry adherent film or coating

3.10

solvent-based paint or lacquer

solvent based pigmented material which when applied in a liquid form to a surface, forms after a time a dry adherent film or coating

3.11

varnish

low viscosity lacquer

3.12

thinners and cleaning agents

solvents

products which are intended to obtain the required viscosity of paints and lacquers and to clean tools and brushes

3.13

slime kit

toy containing materials intended to prepare a slime or a slime type product which is intended for play use

Note 1 to entry: Slime kits comprise of sets for the preparation of play slimes, based on e.g. Boron as element for crosslinking as well as other compounds which enable “slimy” behaviour. Slime kits can contain liquid materials as well as solid materials, e.g. powders or particle-based material.

Note 2 to entry: The main purpose of slime kits is to obtain a play slime self-made from single components. It is not the intention of a slime kit to be used in an experimental or scientific way.

4 Plaster of Paris (gypsum) moulding sets

4.1 Marking

The primary packaging shall in addition to the marking required in Clause 9 bear the following:

“Warning. Not suitable for children under (*) years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.”.

(*) The age shall not be below 5 years.

4.2 First aid information

The instructions for use shall in addition to the general first aid information in 10.2 d) contain the following:

— “In case of eye contact: Wash out eye with plenty of water, holding eye open. Seek immediate medical advice.”;

prEN 71-5:2024 (E)

- “If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.”.

4.3 Safety rules

The instructions for use shall in addition to the rules required in 10.4 contain the following safety rules:

- “Do not place the material in the mouth.”;
- “Do not inhale dust or powder.”;

NOTE Basically plaster of Paris (gypsum) is not a harmful material, but if the powder is inhaled or swallowed, it can form hard clots in the lungs or in the stomach.

- “Do not apply to the body.”.

5 Oven-hardening plasticised PVC modelling clay sets**5.1 Chemical substances**

These modelling clay sets shall consist of PVC (polyvinylchloride) and plasticisers and may contain modifiers, fillers (e.g. China clay) and colourants. Only plasticisers given in Table 1 shall be used.

The maximum content of plasticisers in the mixture shall not exceed 30 % (mass fraction).

The vinyl chloride monomer content shall be below 1 mg/kg (see [9]).

Table 1 — Plasticisers in oven-hardening plasticised PVC modelling clay sets

Chemical substance	CAS-Number
Adipic acid polyesters	various
Alkylsulfonic acid esters (C ₁₂ to C ₂₀) of phenol	91082-17-6
Di-isononyl cyclohexane-1,2-dicarboxylate (DINCH)	166412-78-8
Tributyl acetyl citrate	77-90-7
Tris(2-ethylhexyl) acetyl citrate	144-15-0

During heating of these materials at the maximum permitted temperature and duration, the limits given in Table 2 shall not be exceeded for the emission of the listed toxic substances when tested according to 11.3.

Table 2 — Limits for the emission of substances from oven-hardening plasticised PVC modelling clay sets and polystyrene granules sets during heating

Substance	Limit mg/kg
Benzene	1
Toluene	15
Xylenes	25

5.2 Marking

The primary packaging shall in addition to the marking required in Clause 9 bear the following warning: “Warning. Not suitable for children under (*) years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.”.

(*) The age shall not be below 8 years.

5.3 First aid information

The instructions for use shall in addition to the general first aid information in 10.2 d) contain the following:

- “In case of accidental overheating and inhalation of poisonous gases: Remove person to fresh air and seek immediate medical advice.”.

5.4 Safety rules

The instructions for use shall in addition to the rules required in 10.4 contain the following safety rules:

- “Do not place the material in the mouth.”;
- “Do not exceed a hardening temperature of 130 °C or harmful gases may be produced.”;
- “Do not exceed a hardening time of 30 minutes.”;
- “The hardening process is not part of the function of the toy and should be carried out by the supervising adult.”;
- “Use a domestic oven thermometer, e.g. bimetal, to measure the temperature.”;
- “Do not use a glass thermometer.”;
- “Do not heat the material and cook food at the same time in a domestic oven”;
- “Do not use a microwave oven.”.

6 Moulding sets

6.1 Polystyrene granules sets

6.1.1 Chemical substances

These sets shall contain uncoloured and coloured polystyrene granules in accordance with Table 3.

Table 3 — Polystyrene

Chemical substance	CAS-Number	EINECS-Number
Polystyrene with monomer content of styrene \leq 500 mg/kg	9003-53-6	—

6.1.2 Marking

The primary packaging shall in addition to the marking required in Clause 9 bear the following warnings: “Warning. Not suitable for children under (*) years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.”.

prEN 71-5:2024 (E)

(*) The age shall not be below 10 years.

6.1.3 First aid information

The instructions for use shall in addition to the general first aid information in 10.2 d) contain the following:

- “In case of accidental overheating and inhalation of poisonous gases: Remove person to fresh air and seek immediate medical advice.”.

6.1.4 Safety rules

The instructions for use shall in addition to the rules required in 10.4 contain the following safety rules:

- “Do not exceed a melting temperature of 180 °C.”;
- “The melting process is not part of the function of the toy and should be carried out by the supervising adult.”;
- “Use a domestic oven thermometer, e.g. bimetal, to measure the temperature.”;
- “Do not swallow material.”;
- “Do not heat the material and cook food at the same time in a domestic oven.”;
- “Do not use a glass thermometer.”;
- “Do not exceed the maximum recommended processing period.”;
- “Do not use a microwave oven.”.

6.2 Embedding sets**6.2.1 General**

Only preservatives permitted in foodstuffs (see [7]) and/or cosmetics, except those preservatives which are only allowed in cosmetic products that are rinsed-off after use, (see [8]) shall be used.

Other substances classified as dangerous substances (see [5]) shall not be used in *embedding sets*.

NOTE Substances such as gelatine or agar could be utilized with suitable preservation.

6.2.2 Packaging

The name(s) of any preservative(s) used shall be indicated on the primary packaging.

6.2.3 Marking

The packaging shall in addition to the marking required in Clause 9 bear the following warnings:

“Warning. Not suitable for children under (*) years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.”.

(*) The age shall not be below 5 years.