

**MERCOSUR  
STANDARD**

**NM-300-5:2002**

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



**MERCOSUR  
STANDARDIZATION  
ASSOCIATION**



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## **Foreword**

The AMN – MERCOSUR Standardization Association – aims to promote and undertake actions towards development and harmonization of standards within the Southern Common Market – MERCOSUR, and is comprised by the National Standardization Agencies of the member countries.

The AMN performs its standards activity by means of the CSM – MERCOSUR Sectorial Committees – which were set up for clearly defined action fields.

The Draft MERCOSUR Standards, prepared by the CSM, are submitted to national vote through the Standards National Agencies of member countries.

The acceptance as MERCOSUR Standard through MERCOSUR Standardization Association requires consensus approval by its members.



## Introduction

This MERCOSUR Standard is the Part 5 of Standard on the Safety of toys.

This standard has the following parts:

- Part 1: General, 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 other than experimental sets;
- Part 6: Safety of electric toys.

This part shall be read in conjunction with the parts 1, 2 and 3, especially with the introduction and Chapter 1 of Part 1.

Its purpose is to reduce the health risks for a child when the sets for chemistry experiments are used in foreseen or foreseeable way, taking into account the normal behavior of children.

When such chemical sets are used, the possible danger shall be minimized by including the appropriate information with particular attention to possible hazards, risks and problems. This part of the MERCOSUR Standard sets the requirements for chemical toys that are not experimental sets. The numbers of "Chemical Abstract Service Registry (CAS)" and "European Inventory of Existing Chemical Substances (EINECS)" appearing in Tables 1 to 15 are shown only for informative purposes.

Currently methods are being developed for tests to determine the migration of elements not covered by NM 300-3, which shall be added the standard as soon as possible.

A test method will be developed for the preparation of required materials to carry on migration tests.



## Safety of toys — Part 5: Chemical toys other than experimental sets

### Scope

**1.1** This part of MERCOSUR Standard establishes the requirements for substances and materials for chemical toys (sets) other than experimental sets. It specifies the following:

- The maximum quantities of substances and preparations classified as hazardous and that in excessive quantities, may affect the health of children using them.

**1.2** Also, the requirements are established for the markings, the warnings, safety, list of contents, instructions for use, and information on first aid.

**1.3** This part of the Standard applies to:

- plaster for molding sets;
- ceramic and vitreous enamelling materials supplied in miniature workshop sets;
- oven hardening plasticized PVC modeling clay;
- plastic molding sets;
- embedding sets;
- photographic developing sets;
- adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) supplied with toys or recommended for use with them.

### Normative references

The following Standards contain provisions which, whenever referred in this text, constitute provisions of this MERCOSUR Standard. The indicated editions were valid at the time of this publication. As every standard is subject to reviews, it is recommended to those parties developing agreements based on this standard, to investigate the convenience of adopting the latest editions of such standards. The MERCOSUR member Agencies maintain information on the latest standard editions at all times.

NM 300-1:2002 - Safety of toys. Part 1: General, mechanical, and physical properties

NM 300-2:2002 - Safety of toys. Part 2: Flammability

NM 300-3:2002 - Safety of toys. Part 3: Migration of certain elements

ISO 3696:1987<sup>1)</sup> - Water for analytical laboratory use - Specification and tests

ISO 8317:1989<sup>1)</sup> - Child-resistant packaging -- Requirements and testing procedures for reclosable packages

MERCOSUR RESOLUTION GMC Nbr. 4 / 1999 Update of RES GMC Nbr. 16/95 "List of coloring substances allowed for personal hygiene products, cosmetics and perfumes"

MERCOSUR RESOLUTION GMC Nbr. 5 / 1999 Update of RES GMC Nbr. 27/95 "list of substances of action preservative action allowed for personal hygiene products, cosmetics and perfumes"  
MERCOSUR RESOLUTION GMC Nbr. 6 / 1998 Uniform procedure for control of transportation of hazardous goods and timeline for compliance with the requirements of the agreement on transportation of hazardous goods in MERCOSUR.



- MERCOSUR RESOLUTION GMC Nbr. 6 / 1994 Declaration of ingredients on the labels of packed foods.
- MERCOSUR RESOLUTION GMC Nbr. 6 / 1999 Update of RES GMC Nbr. 28/95 "List of substances that cannot be used in personal hygiene products, cosmetics and perfumes"
- MERCOSUR RESOLUTION GMC Nbr. 7 / 1999 Update of RES GMC Nbr. 26/95 "list of substances that personal hygiene products, cosmetics and perfumes must not contain, except under established conditions and the restrictions"
- MERCOSUR RESOLUTION GMC Nbr. 8 / 1999 Update of RES GMC Nbr. 25/95 "List of ultraviolet filters allowed for personal hygiene products, cosmetics and perfumes"
- MERCOSUR RESOLUTION GMC Nbr. 13/1997 Modification of GMC Resolution Nbr. 47/93
- MERCOSUR RESOLUTION GMC Nbr. 17/1992 Mandatory indications on the labels of foods
- MERCOSUR RESOLUTION GMC Nbr. 24/1995 Requirements for the registration of cosmetics from MERCOSUR and extra-zone and for the clearance of representative companies holding the registration in the import receiving member country and importers
- MERCOSUR RESOLUTION GMC Nbr. 25/1995 List of UV filters, allowed for use in hygiene products, perfumes and cosmetics
- MERCOSUR RESOLUTION GMC Nbr. 26/1995 List of substances that cosmetic products may contain, subject to established restrictions and conditions
- MERCOSUR RESOLUTION GMC Nbr. 27/1995 List preservatives allowed for use in hygiene products, perfumes and cosmetics
- MERCOSUR RESOLUTION GMC Nbr. 28/1995 List substances that cannot be used in formulation of cosmetic products
- MERCOSUR RESOLUTION GMC Nbr. 30/1992 Packaging and plastic equipment in contact with food. Classification of foods and simulators
- MERCOSUR RESOLUTION GMC Nbr. 36/1992 Packaging and plastic equipment intended to come in contact with foods, shall comply with total migration limits
- MERCOSUR RESOLUTION GMC Nbr. 36/1993 Technical regulations for labeling of packaged foods
- MERCOSUR RESOLUTION GMC Nbr. 36/1999 Technical regulations for specific labeling for personal hygiene products, cosmetics and perfumes
- MERCOSUR RESOLUTION GMC Nbr. 41/1996 Nomenclature for ingredients used in personal hygiene products, cosmetics and perfumes from MERCOSUR and extra zone for use in registry among member countries
- MERCOSUR RESOLUTION GMC Nbr. 47/1993 Determination of residual vinyl chloride monomer
- MERCOSUR RESOLUTION GMC Nbr. 47/1999 Capacitation program for good manufacturing practices inspectors for the personal hygiene, cosmetics and perfume industries
- MERCOSUR RESOLUTION GMC Nbr. 49/2000 MERCOSUR technical regulations on Liquid Contents Control for Cosmetic and Toiletry Products for Quantitative indication of products marketed in nominal quantities from 5 g or ml to 20 g or ml.
- MERCOSUR RESOLUTION GMC Nbr. 50/2000 MERCOSUR technical regulation for the quantitative indication of cosmetics
- MERCOSUR RESOLUTION GMC Nbr. 50/2001 Positive list of additives for plastics materials used in the production of food containers and equipment that comes in contact with foods.



MERCOSUR RESOLUTION GMC Nbr. 51/1998 Parameters for Microbiological Control for Personal Hygiene products, Cosmetics and Perfumes. MERCOSUR RESOLUTION GMC Nbr. 54/1999 Periodicity Mechanism for Updating MERCOSUR Lists of substances used in Personal Hygiene products, Cosmetics and Perfumes

MERCOSUR RESOLUTION GMC Nbr. 56/1998 MERCOSUR Technical Regulation for Polyethylene fluoride food packaging and equipment to come in contact with foods

MERCOSUR RESOLUTION GMC Nbr. 66/1996 Good manufacturing practices manual for the manufacturing of cosmetic products

MERCOSUR RESOLUTION GMC Nbr. 71/2000 Update of RES. GMC Nbr. 8 / 99 MERCOSUR technical Regulation "List of UV filters allowed for personal hygiene products, cosmetics and perfumes

MERCOSUR RESOLUTION GMC Nbr. 72/1997 MERCOSUR Technical Regulation for "Labeling of Packaged Foods "(supplementary to GMC Resolution Nbr. 36/93)

MERCOSUR RESOLUTION GMC Nbr. 72/2000 Update of GMC Resolution Nbr. 5 / 99 Technical Regulation MERCOSUR on the "List of Preservative Action Substances allowed for Personal Hygiene Products, Cosmetics and Perfumes.

MERCOSUR RESOLUTION GMC Nbr. 92/1994 Good manufacturing practices and control of establishments in the hygiene, cosmetics and perfume industries

MERCOSUR RESOLUTION GMC Nbr. 110/1994 Definition of cosmetic product

MERCOSUR RESOLUTION GMC Nbr. 133/1996 Criteria for Inclusion, Exclusion and alterations of substance concentrations

## Definitions

For the purposes of this Standard, the following definitions apply:

### **plaster molding sets**

a toy containing moulds into which a mixture of water and plaster (predominantly calcium sulfate hemihydrate  $\text{CaSO}_4 \cdot 0.5 \text{H}_2\text{O}$ ) is poured and allowed to harden, e.g. for preparing figures and plates

### **ceramic and vitreous enamelling materials supplied in miniature workshop sets:**

A toy containing ceramic glazes and vitreous enamels (transparent, opaque or colored) which are used, after mixing with water, to paint ceramic and metallic objects bodies to obtain smooth coatings, after being dried and fired at temperatures greater than 700 °C

### **Oven hardening plasticized PVC-modelling clay set:**

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

### **plastic molding set**

Toy using a polymer instead of ceramic materials to create articles or decorative models, by melting the polymer in ovens at a maximum temperature of 180 °C

### **embedding set**

A toy used to preserve certain objects in a transparent material

### **photographic developing set**

a toy containing chemicals (developer, stop bath and fixing bath) to process black-and-white photographic film and prints and designed to teach the basic principles of photography



**adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) supplied with model sets or recommended for use with them.**

Products used to assemble and coat models, e.g. motorcars, aeroplanes, houses, ships

### **1.3.1**

#### **adhesive**

A non metallic substance capable of joining materials by surface bonding (adhesion). The bond is characterized by having the appropriate resistance (cohesion)

### **1.3.2**

#### **water based paint**

A pigmented material which when applied in a liquid form to a surface, forms a dry adherent film after drying

### **1.3.3**

#### **paints and lacquers containing solvents**

coatings based on binders, solvents, dyes and pigments (coloring agents), fillers and other additives

### **1.3.4**

#### **varnishes**

low viscosity lacquers

### **1.3.5**

#### **thinners and cleaning agents (solvents)**

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

## **Plaster of molding sets**

NOTE – Basically plaster (gypsum) is not a harmful material, but if the powder is inhaled or swallowed, it may form hard inclusions in the lungs or in the stomach.





### 1.4 Markings

The outer packaging shall, in addition to the marking required in **10.1**, bear the following:

**CAUTION! FOR CHILDREN OVER 5 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION. READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.**

### 1.5 Safety rules

The instructions for use shall, in addition to the rules defined in **11.4**, contain the following safety rules:

Do not place the material in the mouth.

Do not inhale dust or powder.

Do not apply to the body.

## Ceramic and vitreous enamelling materials supplied in miniature workshop sets

### 1.6 Chemical preparations

These ceramic glazes and vitreous enamels are mixed preparations of silicate glazes incorporating metal oxides and other compounds, given on Table 1. The maximum mass of each preparation in a set shall not exceed 50 g.

NOTE - A ceramic glaze is a vitrified inorganic silicate material. A ceramic frit is a vitrified inorganic silicate material incorporating a pigment.

**Table 1 — Chemical preparations**

Chemical substance/preparation		CAS number	EINECS number
Calcium silicate hydrate (clay)		1344-96-3	—
Kaolin (china clay)		1332-58-7	—
Sparingly soluble silicate glazes, e.g. enamel and ceramic frits		65997-18-4	266-047-6
Only the following pigments shall be used in these glazes:			
Copper oxide	0,25 %	1317-38-0	215-269-1
Diiron trioxide	5 %	1309-37-1	215-168-2
Ferro-zirconium-silicate	5 %	68412-79-3	270-210-7
Tin dioxide	10 %	18282-10-5	242-159-0
Vanadium-zirconium-silicate	5 %	68186-95-8	269-057-9
(x) Aluminium(y)cobalt(z)oxide	3 %	1333-88-6	—
Zirconium orthosilicate	15 %	10101-52-7	—
Zirconium-praseodymium silicate	5 %	68187-15-5	269-075-7

### 1.7 Markings

The outer packaging shall in addition to the markings required in **10.1** bear the following warnings:

#### WARNING

- 1) ONLY FOR CHILDREN OVER 5 YEARS OF AGE. USE UNDER ADULT SUPERVISION
- 2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE



## 1.8 Safety rules

The instructions for use shall, in addition to the rules defined in **11.4**, contain the following safety rules:

Do not inhale powder.

Do not place the powder in the mouth.

Do not apply to articles intended to come into contact with food and drink.

--- Keep the set away from food and drink.

The heating process is not part of the toy, therefore keep children away during the heating and do not inhale emitted gases.

## Oven hardening plasticized PVC modeling clay sets

### 1.9 Chemical substances

These modeling clay sets shall consist of PVC (Polyvinylchloride), plasticizers, fillers (e.g. China clay, aluminum hydroxide) and colorants.

Only plasticizers listed on Table 2 shall be used.

The maximum content of plasticizers in the preparation shall not exceed 30 %.

The vinylchloride monomer content shall be below 1 mg/kg. See MERCOSUL Resolutions GMC N° 47/93 e Nbr. 13/97.

Table 2 — Plasticizers

Chemical substance	CAS number	EINECS number
Adipic acid polyesters	—	—
Alkylsulfonic acid esters (C <sub>12</sub> to C <sub>20</sub> ) of phenol	—	—
Phthalic acid esters with straight-chain-aliphatic (C <sub>6</sub> upwards)-alcohols and mixtures of these esters	—	—
Tributylacetylitate	77-90-7	201-067-0
Tri-(2-ethylhexyl)-acetylitate	144-15-0	205-617-0

### 1.10 Markings

The outer packaging shall, in addition to the markings required in **10.1**, bear the following warnings:

#### **WARNING!**

1) FOR CHILDREN OVER 8 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.

2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.

### 1.11 Safety rules

The instructions for use shall, in addition to the rules required in **11.4**, contain the following safety rules:

Do not place the material in the mouth.

Do not exceed a temperature of 130 °C as harmful gases may be produced.

Do not exceed a hardening time of 30 min.



The hardening process is not part of the toy and shall be carried out by the supervising adult.

Use a domestic oven thermometer, e.g. bimetal type, to measure the temperature.

Do not use a glass thermometer.

Do not use a microwave oven.

## Plastic molding sets

### 1.12 Polystyrene granules

#### 1.12.1 Chemical substances

These sets shall contain uncolored and colored polystyrene granules in accordance with Table 3.

**Table 3 – Polystyrene**

<b>Chemical substance</b>	<b>CAS number</b>	<b>EINECS number</b>
<b>Polystyrene with monomer content of styrene <math>\leq</math> 500 mg/kg</b>	<b>9003-53-6</b>	-

#### 1.12.2 Markings

The outer packaging shall, in addition to the marking required in **10.1**, bear the following warnings:

**WARNING!**

1) FOR CHILDREN OVER 10 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.

2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.

#### 1.12.3 Safety rules

The instructions for use shall, in addition to the rules established in **11.4**, contain the following safety rules:

Do not exceed a temperature of 180 °C.

The melting process is not part of the toy and shall be carried out by the supervising adult.

Use a domestic oven thermometer, e.g. bimetal type, 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.



### 1.13 Embedding sets

In embedding sets the substances mentioned in the MERCOSUR RESOLUTION GMC Nbr.. 6 / 1998 shall not be used..

NOTE - Substances such as gelatin or agar-agar can be used with suitable preservatives.

Only allowed preservatives for food products and cosmetics defined in the following MERCOSUR Resolutions, can be used: GMC Nbr.. 4 / 1999, Nbr.. 5 / 1999, Nbr.. 6 / 1999, Nbr.. 7 / 1999, Nbr.. 8 / 1999, Nbr.. 24/1995, Nbr.. 25/1995, Nbr.. 26/1995, Nbr.. 27/1995, Nbr.. 28/1995, Nbr.. 36/1999, Nbr.. 41/1996, Nbr.. 47/1999, Nbr.. 49/2000, Nbr.. 50/2000, Nbr.. 51/1998, Nbr.. 54/1999, Nbr.. 66/1996, Nbr.. 92/1994, Nbr.. 71/2000, Nbr.. 72/2000, Nbr.. 110/1994, Nbr.. 133/1996, except those meant to be used for a short time. The name of preservative used must appear on the label, according to the MERCOSUR RESOLUTION GMC Nbr.. 6 / 1994, Nbr.. 17/1992, Nbr.. 30/1992, Nbr.. 36/1992, Nbr.. 36/1993, Nbr.. 50/2001, Nbr.. 56/1998, Nbr.. 72/1997.

#### 1.13.1 Packaging

The presence of any preservatives shall be indicated on the outer packaging.

#### 1.13.2 Markings

The packaging shall, in addition to the marking required in 10.1, bear the following warnings:

WARNING!

1) FOR CHILDREN OVER % YEARS OF AGE ONLY. USE UNDER ADULT SUPERVISION.

2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE

#### 1.13.3 Safety rules

The instructions for use shall, in addition to the rules required in 11.4, contain the following safety rule:

Do not place material containing preservatives in the mouth.

## Photographic processing sets

### 1.14 Chemical substances and preparations

Only substances and preparations listed in Table 4 shall be supplied in black-and-white photographic sets up to the quantities stated. These quantities are defined based on the necessary quantities to prepare for 0.5 l batches of each one of the solutions.

Table 4 — Maximum amounts of chemical substances

Substances	Maximum amount per set	CAS number	EINECS number
Acetic acid 7 % (V/V)	100 ml	64-19-7	200-580-7
Ammonium thiosulfate	4 × 75 g	7783-18-8	231-982-0
Ascorbic acid	4 × 10 g	50-81-7	200-066-2
Citric acid	5 g	77-92-9	201-069-1
Disodium disulfite	4 × 10 g	7681-57-4	231-673-0
N-(4-hydroxyphenyl)-amino acetic acid	4 × 5 g	2298-36-4	218-947-5
N-methyl-p-amino-phenol and its salts	4 × 5 g	55-55-0	200-237-1
1-phenyl-pyrazo-lidin-3-one	4 × 1 g	92-43-3	202-155-1
Potassium bromide	4 × 0,5 g	7758-02-3	231-830-3
Sodium carbonate	4 × 20 g	497-19-8	207-838-8
Sodium sulfite	4 × 20 g	7757-83-7	231-821-4
Sodium thiosulfate	4 × 75 g	7772-98-7	231-867-5

NOTE The amounts given refer to anhydrous chemicals. Equivalent amounts of the hydrated chemicals or its salts (where applicable), which have different CAS and EINECS numbers, may replace the anhydrous substances.



## 1.15 Packaging

The chemicals may be packed as mixed preparations for the developing bath and the fixing bath in order to avoid spilling.

The sets shall contain eye protectors, gloves and tweezers.

## 1.16 Markings

### 1.16.1 Markings on the outer packaging

The outer packaging shall, in addition to the marking required in **10.1.1**, bear the following warnings:

#### **WARNING!**

1) FOR CHILDREN OVER 12 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.

2) THIS SET CONTAINS HAZARDOUS CHEMICALS. READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM EXACTLY. KEEP FOR FUTURE REFERENCE.

### 1.16.2 Markings of the individual packaging

Each individual container shall be marked according to clause **10.2**.

## 1.17 Safety rules

When experimenting with these sets, care shall be taken and the instructions shall be followed strictly. The safety information of the containers shall be observed.

The instructions for use shall, in addition to the rules required in **11.4**, contain the following safety rules:

Always wear eye protection.

Always wear protective gloves and use tweezers.

Do not place photographic solutions in the mouth.

Do not mix chemicals where food or drink is handled.

Do not allow chemicals to come into contact with the skin and eyes

Do not swallow chemicals.

Avoid powder inhalation.

## **Adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) supplied with the sets**

### 1.18 General

Adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) supplied in model sets shall comply with the requirements in clause **9**. The instructions included in the set shall mention only adhesives, paints, lacquers, varnishes, thinners and cleaning agents (solvents) that comply with the requirements in clause **9**.

### 1.19 Adhesives

#### 1.19.1 Water based adhesives

Water based adhesives shall consist of water, basic materials listed in Table 5, special materials listed in Table 6 and Table 8, preservatives, fillers and other additives modifiers.



Only preservatives allowed for food products and cosmetics can be used, as defined in the following MERCOSUR RESOLUTIONS: GMC Nbr.. 4 / 1999, Nbr.. 5 / 1999, Nbr.. 6 / 1999, Nbr.. 7 / 1999, Nbr.. 8 / 1999, Nbr.. 24/1995, Nbr.. 25/1995, Nbr.. 26/1995, Nbr.. 27/1995, Nbr.. 28/1995, Nbr.. 36/1999, Nbr.. 41/1996, Nbr.. 47/1999, Nbr.. 49/2000, Nbr.. 50/2000, Nbr.. 51/1998, Nbr.. 54/1999, Nbr.. 66/1996, Nbr.. 92/1994, Nbr.. 71/2000, Nbr.. 72/2000, Nbr.. 110/1994, Nbr.. 133/1996, except those meant to be used for a short time. The name of preservative used must appear on the label, according with the MERCOSUR RESOLUTION GMC Nbr.. 6 / 1994, Nbr.. 17/1992, Nbr.. 30/1992, Nbr.. 36/1992, Nbr.. 36/1993, Nbr.. 50/2001, Nbr.. 56/1998, Nbr.. 72/1997. Basic materials for water based adhesives must comply with table 5.

**Table 5 — Basic materials for water-based adhesives and water-based paints and lacquers**

Chemical substance	CAS number	EINECS number
Acrylic polymers	—	—
Hydrophilic polyurethane containing neither free isocyanate-groups nor aromatic amino-compounds	—	—
Polymers and copolymers with monomers as permitted for materials intended to come into contact with foodstuffs	—	—
Poly(vinyl acetate)	9003-20-7	—
Poly(vinyl alcohol)	9002-89-5	209-183-3

The basic material shall be compliant with MERCOSUR RESOLUTION GMC Nbr.. 6 / 1994, Nbr.. 17/1992, Nbr.. 30/1992, Nbr.. 36/1992, Nbr.. 36/1993, Nbr.. 50/2001; Nbr.. 56/1998, Nbr.. 72/1997. Materials and plastic articles intended to come in contact with food.

The migration solvent shall be water (see ISO 3696). The contact time shall be 1 h at 40 °C.

#### 1.19.1.1 Liquid adhesives for paper and wood

Special materials for paper and wood adhesives shall be in accordance with Table 6.

**Table 6 — Special materials for adhesives for paper and wood and water-based paints and lacquers**

Chemical substance	CAS number	EINECS number
Cellulose ethers (e.g. carboxymethylcellulose, methylcellulose)	9004-67-5	—
Dextrin	9004-53-9	232-675-4
Gum arabic	9000-01-5	232-519-5
Starch or modified starch	9005-25-8	232-679-6



Special additives for paper and wood adhesives shall be in accordance with Table 7.

**Table 7 — Special additives for liquid adhesives for paper and wood**

Chemical substance	CAS number	EINECS number
Butyl glycolate < 3 %	7397-62-8	230-991-7
Caprolactam < 5 %	105-60-2	203-313-2
Glycerol	56-81-5	200-289-5
Polyacrylamide	9003-05-8	—
Polyacrylic acid	9003-01-4	—
Polyethylene glycol	25322-68-3	—
Polymethacrylic acid	25087-27-7	—
Polypropylene glycol	25322-69-4	—
Sodium salts of fatty acids (C <sub>14</sub> upwards)	—	—
Sorbitol	50-70-4	200-061-5
2-(2-butoxyethoxy)ethyl acetate < 3 %	124-17-4	204-685-9
Xylitol	87-99-0	201-788-0

The polymers indicated in table 7 shall comply with MERCOSUR RESOLUTION GMC Nbr.. 6 / 1994, Nbr.. 17/1992, Nbr.. 30/1992, Nbr.. 36/1992, Nbr.. 36/1993, Nbr.. 50/2001, Nbr.. 56/1998, Nbr.. 72/1997. Materials and plastic articles intended to come in contact with foods.

The migration solvent shall be water (see ISO 3696). The contact time shall be 1 h at 40 °C.

Liquid adhesives for paper and wood shall not contain more than 10 % of butyl glycolate, caprolactam and 2-(2-butoxyethoxy) ethyl acetate in total.

**1.19.1.1.1 Packaging**

Containers for water based adhesives in a set shall not contain more than 100 ml. The presence of any preservatives used shall be indicated on the outer packaging.

**1.19.1.1.2 Markings**

The adhesive container shall, in addition to the markings required in **10.1**, bear the following warnings:

**WARNING!**

- 1) FOR CHILDREN OVER 3 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.
- 2) READ THE INSTRUCTIONS BEFORE USE< FOLLOW THEM AND SAVE THEM FOR REFERENCE

**1.19.1.2 Adhesive sticks for paper**

Special materials for adhesive sticks for paper shall be in accordance with Table 6, Table 7 and Table 8.



**Table 8 — Special material for adhesive sticks for paper**

Chemical substance	CAS number	EINECS number
Poly(vinyl pyrrolidone)	9003-39-8	—

The products must comply with the provisions of MERCOSUR RESOLUTION GMC Nbr. 6 / 1994, Nbr.. 17/1992, Nb.. 30/1992, Nbr. 36/1992, Nbr. 36/1993, Nbr.. 50/2001; Nbr. 56/1998, Nbr. 72/1997. Materials and plastic articles intended to come in contact with food.

The migration solvent shall be water (see ISO 3696). The contact time shall be 1 h at 40 °C.

#### 1.19.1.2.1 Packaging

The mass of the adhesive stick in a set shall not exceed 50 g.

#### 1.19.1.2.2 Markings

The packaging, if any, or the adhesive stick container shall in addition to the markings in **10.1**, bear the following warnings:

#### **WARNING!**

- 1) FOR CHILDREN OVER 3 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.
- 2) READ THE INSTRUCTION BEFORE USE, FOLLOW THEM AND SAVE THEM FOR REFERENCE

#### 1.19.2 Solvent based Adhesives

Solvent based adhesives are made up of substances mentioned on tables 5 thru 12, and may contain fillers, additives and plasticizers. Plasticizers must comply with the provisions of MERCOSUR RESOLUTION GMC Nbr. 6 / 1994, Nbr. 17/1992, Nbr. 30/1992, Nbr. 36/1992, Nbr. 36/1993, Nbr. 50/2001; Nbr. 56/1998, Nbr. 72/1997. Materials and plastic articles intended to come in contact with foods.

The plasticizer content in these adhesives shall not exceed 8 %. The content of modifiers shall not exceed 3 %.

#### 1.19.2.1 Multipurpose adhesives

Basic materials for multipurpose adhesives shall be in accordance with Table 9.

**Table 9 — Basic materials for multi-purpose adhesives**

Chemical substance	CAS number	EINECS number
Acrylic polymers	9003-01-4	—
Cellulose nitrate	9004-70-0	—
Poly(vinyl acetate)	9003-20-7	—
Vinyl acetate copolymers	—	—

#### 1.19.2.2 Contact adhesives

Basic materials for contact adhesives shall be in accordance with Table 10.





**Table 10 — Basic materials for contact adhesives**

Chemical substance	CAS number	EINECS number
Polymers and copolymers with monomers as permitted for materials intended to come into contact with foodstuffs	—	—
Poly(chlorobutadiene)	9010-98-4	—
Polyurethane	73561-64-5	—

### 1.19.2.3 Special adhesives

Basic materials for special adhesives shall be in accordance with Table 11.

**Table 11 — Basic materials for special adhesives**

Chemical substance	CAS number	EINECS number
Acrylic polymers	—	—
Polymers and copolymers with monomers as permitted for materials intended to come into contact with foodstuffs	—	—
Polystyrene	9003-53-6	—
Poly(vinylchloride) copolymers	—	—

The basic materials listed in the tables 9 thru 11 must comply with the provisions of MERCOSUR RESOLUTION GMC Nbr. 6 / 1994, Nbr. 17/1992, Nbr. 30/1992, Nbr. 36/1992, Nbr. 36/1993, Nbr. 50/2001; Nbr. 56/1998, Nbr. 72/1997. Materials and plastic articles intended to come in contact with foods.

The migration solvent shall be water (see ISO 3696). The contact time shall be 1 h at 40 °C.



Table 12 — Solvents

Chemical substance/preparation	CAS number	EINECS number
Acetone	67-64-1	200-662-2
Cyclohexane	110-82-7	203-806-2
Diethyl ketone	96-22-0	202-490-3
Ethyl acetate	141-78-6	205-500-4
Ethyl alcohol	64-17-5	200-578-6
Isopropyl acetate	108-21-4	203-561-1
Isopropyl alcohol	67-63-0	200-661-7
Methyl acetate	79-20-9	201-185-2
Methylethylketone	78-93-3	201-159-0
Methyl isopropylketone	563-80-4	209-264-3
<i>n</i> -butyl acetate	123-86-4	204-658-1
<i>n</i> -propyl acetate	109-60-4	203-686-1
1-methoxy-2-propanol	107-98-2	203-539-1
1,1-dimethoxyethane	534-15-6	208-589-8
Petrol fraction (60 to 140) °C (maximum content of <i>n</i> -hexane of 5 %)	64742-89-8	265-192-2
Petrol fraction (135 to 210) °C (maximum content of <i>n</i> -hexane of 5 %)	64742-88-7	265-191-7

The maximum content of 1-methoxy-2-propanol shall be 20 %.

#### 1.19.2.4 Packaging

The container contents in a set shall not exceed 15 g.

#### 1.19.2.5 Markings

The outer packaging of the set shall, in addition to the markings required in **10.1**, bear the following warnings:

WARNING!

- 1) FOR CHILDREN OVER 8 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.
- 2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.

The individual container shall be marked according to **10.2**.



### **1.19.2.6 Safety rules**

The instructions for use shall, in addition to the rules established in **11.4**, contain the following safety rules:

Keep away from ignition sources.

Do not allow adhesive to come into contact with the skin, the eyes and the mouth.

Do not swallow material.

Do not inhale fumes.

### **1.20 Water based paints and lacquers**

Water based paints and lacquers shall consist of water, coloring agents, fillers, preservatives, modifiers, basic materials given in Table 5, special materials given in Table 6 and organic solvents and film forming agents given on Table 13.

The content of organic solvents and film forming agents must not exceed 10%. Only preservatives allowed in food products and cosmetics defined in MERCOSUR RESOLUTION GMC Nbr. 4 / 1999, Nbr. 5 / 1999, Nbr. 6 / 1999, Nbr. 7 / 1999, Nbr. 8 / 1999, Nbr. 24/1995, Nbr. 25/1995, Nbr. 26/1995, Nbr. 27/1995, Nbr. 28/1995, Nbr. 36/1999, Nbr. 41/1996, Nbr. 47/1999, Nbr. 49/2000, Nbr. 50/2000, Nbr. 51/1998, Nbr. 54/1999, Nbr. 66/1996, Nbr. 92/1994, Nbr.71/2000, Nbr. 72/2000, Nbr. 110/1994, Nbr. 133/1996 shall be used.

The migration of elements of the used product shall not exceed the limits shown on Table 1 of NM 300-3.

**Table 13 — Organic solvents and film forming agents**

Chemical substance/preparation	CAS number	EINECS number
Di (2-methyl-propyl) ester of aliphatic dicarbonacids (C <sub>20</sub> to C <sub>33</sub> ) (maximum 2 % as film forming agents)	—	—
Ethanol	64-17-5	200-578-6
Mixture of aliphatic esters and alcohols (C <sub>12</sub> to C <sub>14</sub> ) (maximum 2 % as film forming agents)	—	—
1-methoxy-2-propanol	107-98-2	203-539-1
1, 2-propandiol (propyleneglycol)	57-55-6	200-338-0
2-methyl-2, 4-pentandiol (hexyleneglycol)	107-41-5	203-489-0
2-propanol	67-63-0	200-661-7
Petrol fraction (60 to 140) °C (maximum content of <i>n</i> -hexane of 5 %)	64742-89-8	265-192-2
Petrol fraction (135 to 210) °C (maximum content of <i>n</i> -hexane of 5 %)	64742-88-7	265-191-7

### 1.20.1 Packaging

The contents of the container in a set shall not exceed 100 ml. The presence of any preservatives used shall be indicated on the outer packaging.

### 1.20.2 Markings

The packaging or the container shall, in addition to the markings required in **10.1**, bear the following warnings:

**WARNING!**

- 1) FOR CHILDREN OVER 8 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.
- 2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.



**1.20.3 Safety rules**

The instructions for use shall, in addition to the rules required in 11.4, contain the following safety rules:

Do not allow material to come into contact with the eyes.

Do not place material in the mouth.

Do not inhale vapors.

**1.21 Solvent based paints, lacquers, thinners and cleaning solvents**

Solvent based paints and lacquers shall contain colorants, fillers, modifiers, basic materials listed on Table 14 and solvents listed on Table 13 and Table 15. The content of modifiers shall not exceed 3 %.

For solvent based paints and lacquers prepared with nitrocellulose the content of plasticizer shall not exceed 5 %.

Thinners and cleaning solvents shall contain only substances and preparations listed on Table 13 and Table 15 except in the case of film forming agents.

Paints and lacquers shall not contain more than 2 % of isobutanol or *n*-butanol and not more than 20 % 1-methoxy-propanol-2. Isobutanol, *n*-butanol and 1-methoxy-propanol-2 shall not be used in thinners and cleaning agents.

Pressurized containers (aerosols) shall not be used for paints, lacquers, thinners or cleaning solvents.

The migration of elements of the product used shall not exceed the limits shown on Table 1 of NM 300-3.

**Table 14 — Basic materials**

Chemical substance	CAS number	EINECS number
Acrylic polymers	—	—
Alkyd polymers	—	—
Nitrocellulose	9004-70-0	—

**Table 15 — Solvents**

Chemical substance/preparation	CAS number	EINECS number
Glyceroltriacetate	102-76-1	203-051-9
Isobutanol	78-83-1	201-148-0
Methylethylketone (butan-2-one)	78-93-3	201-159-0
1-methoxy-2-propanol (PM)	107-98-2	203-539-1
(1-methoxy-2-propyl)-acetate (MPA)	108-65-6	203-603-9
<i>n</i> -butanol	71-36-3	200-751-6
3-methoxy- <i>n</i> -butyl-acetate	4435-53-4	224-644-9

**1.21.1 Packaging**



The maximum content of the container in a set shall not exceed:

15 ml for preparations with a flash point up to 55 °C.

50 ml for preparations with a flash point above 55 °C.

Outer packaging shall be according to ISO 8317 requirements.

### **1.21.2 Marking**

The outer packaging shall, in addition to the markings required in **10.1**, bear the following warnings:

#### **WARNING!**

1) FOR CHILDREN OVER 8 YEARS OF AGE ONLY. FOR USE UNDER ADULT SUPERVISION.

2) READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE.

### **1.21.3 Safety rules**

The instructions for use shall, in addition to the rules established in **11.4**, contain the following safety rules:

Keep product away from ignition sources.

Do not allow product to come in contact with the skin and the eyes.

Do not place material in the mouth.

Do not inhale vapors.

## **Markings**

Markings shall be visible, easily legible, indelible and in the national language(s) of the country of sale.

Letters of a minimum height of 7 mm shall be used for the terms "WARNING!" and "CAUTION!".

If the container is too small to carry all the necessary information, an additional instruction leaflet shall be supplied with the package.

The packaging shall indicate all substances listed in MERCOSUR RESOLUTION GMC Nbr. 6 / 1998.

Detailed safety information shall be given in the instructions for use.

## **1.22 Markings of the outer packaging**

### **1.22.1 Manufacturer's identification**

The outer packaging shall bear the name and/or trade name and/or trademark and address of the manufacturer or his authorized representative or importer.

The name and address may be abbreviated provided that the abbreviation enables the manufacturer, his authorized representative or the importer to be identified.

### **1.22.2 Warning and caution phrases**

The outer packaging shall bear the relevant warning and caution phrases given in clauses **4** to **9**.

## **1.23 Markings of individual containers and outer containers**



Where relevant, outer and individual containers shall be marked with the following information, in capital letters:

- a) The name of the chemical substance or preparation as given on the relevant tables and clauses, if necessary, according to the MERCOSUR RESOLUTION GMC Nbr. 6 / 1998;
- b) The required symbol of danger and warning sentences of risk and safety requirements specified in NM 300-4.

## Instructions for use

### 1.24 General

The instructions for use shall be given in the national language(s) of the country of sale. The markings of the outer packaging according to **10.1** shall be repeated on the cover of the instructions for use.

Some of the instructions and information phrases are not applicable to the requirements given in clauses **4** to **9**. In these cases, exceptions shall be documented and/or modified phrases shall be included.

### 1.25 List of contents

The contents lists shall include the following information:

- a) when relevant, the chemical(s) supplied;
- b) when applicable, the risk/safety phrases specified in MERCOSUR RESOLUTION GMC Nbr. 6 / 1998;
- c) where relevant and if the substances/preparations are dangerous according to the Resolution mentioned in **11.2 b)**, an empty space shall be provided, allowing the indication of the telephone number of the nearest poison centre (central office or first aid information) or hospital, which shall be contacted in case of accidental intake of dangerous substances;
- d) general first aid information as follows:- In case of skin contact and burns: Wash the affected area with plenty of water for at least 15 minutes and seek medical advice.

This phrase is not applicable for sections: **4, 5, 6, 7.2**.

Modified version for section **8**:

In case of skin contact: Wash the affected area with plenty of water for at least 15 minutes.

Modified version for sections **9.2.1, 9.2.2, 9.3, 9.4**.

In case of skin contact: Wash the affected area with plenty of water.

In case of eye contact: Wash out the eye with plenty of water, keeping the eye open. Seek immediate medical advice.

This phrase is not applicable for sections: **6, 7.1, 7.2**.

In case of ingestion: wash out mouth with water, drink some fresh water. DO NOT INDUCE VOMITING. Seek immediate medical advice.

This phrase is not applicable for sections: **5, 6, 7.1, 9.2.1, 9.2.2, 9.3**.

In case of inhalation: Take the person to a well ventilated area.

This phrase does not apply to sections 4, 5, 7.2, 9.2.1.1 and 9.2.1.2



Modified version for section 6:

In case of accidental overheating and inhalation of poisonous gases: take the person to an external well ventilated area and seek medical advice.

When in doubt, immediately seek a doctor, taking the product with the packaging along with the victim..

In case of injury, always seek a doctor.

NOTE - First aid information may also be in the instructions for carrying out the activity

e) Specific information on first-aid when necessary.

### **1.26 Recommendations for adult supervision**

When appropriate, the recommendations for supervising adults shall contain the following information:

- a) This chemical toy is for use only for children over the age of ... years (as appropriate).
- b) Read and follow these instructions, the safety rules and the first aid information and keep them for reference.
- c) Incorrect use of chemicals can cause injury and damage to health. Only carry out those activities which are listed in the instructions.
- d) Because children's abilities vary so much, even within age groups, supervising adults shall exercise discretion as to which activities are suitable and safe for them. The instructions shall enable supervisors to assess any activity to establish its suitability for a particular child.
- e) The supervising adult shall discuss the warnings, safety information and the possible hazards with the child or children before commencing the activities. Particular attention shall be paid to the safe handling of alkalies, acids and flammable liquids.
- f) The area surrounding the activity shall be kept clear of any obstructions and away from the storage or handling of food. It shall be well lit and ventilated and close to a water supply. A solid table with a heat resistant top shall be used whenever possible.
- g) The working area shall be cleaned immediately after carrying out the activity.

### **1.27 Safety rules**

The following safety rules shall be indicated:

- a) Keep children under the specified age limit and animals away from the activity area.
- b) Store chemical toys out of reach of young children.
- c) Wash hands after carrying out activities.
- d) Clean all equipment after use.
- e) Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
- f) Do not eat, drink or smoke in the activity area.

And where appropriate:

- g) Special safety rules given in sections 4 to 9.

### **1.28 Instructions for carrying out the activities**





Detailed information on how to perform each activity shall be provided.

NOTE 1 – The activities, where relevant, shall be evaluated by the manufacturer.

NOTE 2 – Any known hazards arising from the use of the toy shall be detailed.

### **1.29 Spills and disposal of chemicals**

When relevant, information on the handling of spills and on the disposal of used chemicals shall be provided.

The instructions for disposal shall take into account national regulations for the disposal of such chemicals.



## **Attachment A** (informative)

### **References**

In the study that supports this Standard, the following documents were consulted:

**AENOR - ASOCIACIÓN ESPAÑOLA DE NORMALIZACIÓN Y CERTIFICACIÓN**

UNE-EN 71-5: 1994. Seguridad de los Juguetes. Juguetes químicos distintos de los juegos de experimentos.

**BSI - BRITISH STANDARDS INSTITUTION**

BS - EN 71 - 5:1993. Safety of toys. Part 5. Chemical toys (sets) other than experimental sets.

**COPANT - COMISIÓN PANAMERICANA DE NORMAS TÉCNICAS**

COPANT 1657 Parte 5:1999 - Seguridad de los juguetes. Juguetes químicos distintos de los juegos de experimentos.

*The present document was translated into English and revised by independent translators*

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**ICS 97.190; 97.200.50**

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## **Synthesis of the study phase**

### **MERCOSUR Standard project 04:00-01-5**

#### **Safety of toys. Part 5: Chemical toys (sets) other than experimental toys**

## **1 INTRODUCTION**

This part of this MERCOSUR Standard establishes the requirements for the substances and materials that are used in chemical toys other than experimental sets. The maximum quantities of substances and preparations classified as hazardous are specified, as excessive quantities may affect children's health when manipulating them.

Also, the marking requirements, warning messages, safety rules, list of contents, instructions for use and first aid information are specified.

This MERCOSUR Standard was developed by CSM 04 - Sectoral Mercosur Committee for Toys.

The base text for the MERCOSUR Standard 04:00-001-5 draft was prepared by (IRAM) in Argentina

## **2 SPECIALIZED COMMITTEE**

This Standard was prepared by CSM 04 – Toys, and the Technical Secretary of CSM 04 was performed by IRAM.

The active members that participated in the preparation of this document were:

ABNT – Associação Brasileira de Normas Técnicas

INTN – Instituto Nacional de Tecnología y Normalización

IRAM – Instituto Argentino de Normalización

UNIT – Instituto Uruguayo de Normas Técnicas

## **3 PREVIOUS HISTORY**

### **AENOR- ASOCIACIÓN ESPAÑOLA DE NORMALIZACIÓN Y CERTIFICACIÓN**

UNE-EN 71-5:1994 Safety of Toys. Chemical toys other than experimental sets

### **BSI- BRITISH STANDARDS INSTITUTION**



BS-EN 71-5:1993. Safety of toys. Part 5. Chemical toys (sets) other than experimental sets.

**COPANT- Comisión PANAMERICANA DE NORMAS TÉCNICAS**

COPANT 1657 Parte 5:1999 – Safety of toys. Chemical toys other than experimental sets

**4 CONSIDERATIONS**

The base text for the MERCOSUR Standard 04:00-01-5 was prepared by Argentina, based on the EN 71-5:1993, in the UNE and BS versions.

It was submitted to the standardization agencies of the MERCOSUR member countries on September 17, 2001, for analysis by the Study Committees.

The draft was discussed in the technical meeting carried out in Buenos Ayres from October 29th to October 31<sup>st</sup>, 2001, in which from changes were made, and approved as a MERCOSUR Standard Draft.

It was submitted to vote in the CSM 04 in the period of 01/01/2002 to 03/31/2002.

During the voting period, approving vote was received from IRAM (Argentina) with observations regarding form, which were accepted and incorporated to the draft. Approving vote without observations was received from ABNT (Brazil), and UNIT (Uruguay) and INTN (Paraguay) refrained from voting.

Thus, the Draft was approved as Proposed MERCOSUR Standard.

The Draft was sent to AMN, according to the established in the MERCOSUR Standard Elaboration Procedures, for edition and approval as MERCOSUR Standard NM 300-5, in November, 2002.

*The present document was translated into English and revised by independent translators*