

INTERNATIONAL STANDARD 4614

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Plastics — Melamine-formaldehyde mouldings — Determination of extractable formaldehyde

*Plastiques — Pièces moulées à base de résine mélamine-formaldéhyde — Détermination
du formaldéhyde extractible*

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FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4614 was developed by Technical Committee ISO/TC 61, *Plastics*, and was circulated to the member bodies in December 1975.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Portugal
Austria	India	Romania
Belgium	Iran	Spain
Brazil	Ireland	Sweden
Canada	Israel	Switzerland
Czechoslovakia	Japan	Turkey
Finland	Mexico	United Kingdom
France	Netherlands	Yugoslavia
Germany	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

U.S.A.
U.S.S.R.

Plastics — Melamine-formaldehyde mouldings — Determination of extractable formaldehyde

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the extractable formaldehyde in melamine-formaldehyde mouldings intended for use in contact with food and beverages.

2 PRINCIPLE

Certain liquids, simulating common food and beverage constituents, are placed in contact with mouldings of the sample material, under defined conditions. The formaldehyde content of the liquid is then determined and the quantity of formaldehyde extracted per unit area of contact with the moulding is calculated.

Two procedures for the determination of formaldehyde in the liquid are given.

3 REFERENCE

ISO 2227, *Formaldehyde solutions for industrial use — Determination of formaldehyde content.*

4 TEST SPECIMENS

4.1 Form

Moulded containers, for example beakers or cups, having an internal surface area of 150 to 250 cm² and capacity 150 to 250 cm³ are suitable as test specimens. The quotient of the number expressing the surface wetted in square centimetres by that expressing the volume of liquid in cubic centimetres must lie between 0,75 and 1.

4.2 Number

Six specimens are required. The determination is carried out in duplicate with each of the three extraction liquids (clause 5).

5 EXTRACTION LIQUIDS

5.1 Water, distilled or de-ionized.

5.2 Acetic acid: 30 g/l solution of glacial acetic acid in distilled water.

5.3 Ethanol: 100 g/l solution of ethanol in distilled water.

6 EXTRACTION PROCEDURE

Rinse the test container with warm distilled water and dry thoroughly.

Place a suitable quantity (see 4.1) of the extraction liquid (clause 5) at 80 °C into the test container at room temperature. Cover the container with a watch glass to protect against evaporation and contamination, and allow to stand in air at room temperature for 30 min.

Transfer the extract (without washing) to a 250 ml conical flask, stopper the flask and cool the solution in a cold water bath to 20 ± 0,5 °C.

Immediately carry out the formaldehyde analysis by procedure A (7.3.2) or procedure B (8.3.2).

7 DETERMINATION OF FORMALDEHYDE — PROCEDURE A

7.1 Reagents

7.1.1 All reagents, including distilled water and extraction liquids, shall be free from formaldehyde in amounts detectable by the method described.

7.1.1.1 Water, distilled or de-ionized.

7.1.1.2 Chromotropic acid disodium salt (disodium 4,5-dihydroxy-2,7-naphthalene sulphonate) solution.

Dissolve 0,50 g of chromotropic acid disodium salt in 50 ml of distilled water. Transfer the solution to a 100 ml volumetric flask and make up to volume. Prepare the solution fresh each day.

7.1.1.3 Formaldehyde solutions.

All solutions shall be made up at 20 °C.

7.1.1.3.1 Formaldehyde stock solutions.

Pipette 25,0 ml of industrial formalin (containing approximately 400 g/l formaldehyde) into a 1000 ml volumetric flask and make up to volume with distilled water. Determine the concentration of formaldehyde in the stock solution using the method described in ISO 2227.

This solution shall not be kept longer than one week.