

# INTERNATIONAL STANDARD



# 120

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

## Plastics — Phenol-formaldehyde mouldings — Determination of free ammonia and ammonium compounds — Colorimetric comparison method

*Plastiques — Pièces moulées à base de phénoplastes — Dosage de l'ammoniac libre et des composés ammoniacaux — Méthode par comparaison colorimétrique*

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**Descriptors** : plastics, phenol formaldehyde resins, mouldings, chemical analysis, determination of content, ammonia, colorimetric analysis, comparison analysis.

## 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 120 was developed by Technical Committee ISO/TC 61, *Plastics*, and was circulated to the member bodies in October 1975.

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

|                |             |                       |
|----------------|-------------|-----------------------|
| Australia      | Iran        | South Africa, Rep. of |
| Austria        | Israel      | Spain                 |
| Belgium        | Italy       | Sweden                |
| Brazil         | Japan       | Switzerland           |
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| Germany        | Peru        | U.S.S.R.              |
| Hungary        | Poland      | Yugoslavia            |
| India          | Romania     |                       |

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 120-1959, of which it constitutes a technical revision.

# Plastics — Phenol-formaldehyde mouldings — Determination of free ammonia and ammonium compounds — Colorimetric comparison method

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a colorimetric comparison method for the semi-quantitative determination of the amount of ammonia in phenol-formaldehyde mouldings.

NOTE — This International Standard does not provide an absolute measure of the ammonia present.

The amount of ammonia in a moulded article is of importance when corrosion of metal inserts or contamination of foodstuffs in contact with the article has to be considered.

## 2 REFERENCES

ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

ISO 648, *Laboratory glassware — One-mark pipettes.*

## 3 PRINCIPLE

Hot aqueous extraction of free ammonia from a powdered test portion. Distillation of the aqueous extract in the presence of potassium permanganate and sodium hydroxide solution. Coloration of the distillate by reaction with Nessler reagent and comparison of the colour with that obtained in each of a series of standard matching solutions.

## 4 REAGENTS

During the analysis, use only ammonia-free reagents of recognized analytical grade, and only ammonia-free distilled water or water of equivalent purity.

**4.1 Potassium permanganate.**

**4.2 Sodium hydroxide, 2 % (m/m) solution.**

**4.3 Standard matching stock solution,** containing 10 mg of  $\text{NH}_3$  per litre.

Dissolve 31,5 mg of ammonium chloride in 1 000 ml of water.

**4.4 Nessler reagent.**

## 5 APPARATUS

Ordinary laboratory apparatus, and

**5.1 Means for reducing the mouldings to a powder.**

**5.2 Sieve,** with nominal apertures of 250  $\mu\text{m}$ , conforming to ISO 565.

**5.3 Balance,** accurate to 0,01 g.

**5.4 Glass-stoppered flask,** 250 ml capacity.

**5.5 Distillation apparatus,** comprising a flask of 250 ml capacity, splash head and a condenser.

**5.6 Filter funnel,** with hardened medium speed filter paper.

**5.7 Pipettes,** capacities 2 and 10 ml, complying with the requirements of ISO 648.

**5.8 Nessler cylinders,** 50 ml capacity.

## 6 PREPARATION OF TEST SAMPLE

Reduce a fully representative sample of the mouldings to powder by filing, milling, grinding, turning or drilling, taking care that no undue heating of the material occurs. Sieve this powder, using the sieve (5.2), and use for the test that portion passing through the sieve. Keep the sample in a tightly stoppered flask until required.

The extraction with water (see 7.2) shall begin within 1 h of grinding the moulding.

NOTE — The method of reduction to powder can affect the results. In cases of dispute, or for referee purposes, the method should be agreed between the interested parties.

## 7 PROCEDURE

### 7.1 Test portion

Weigh, to the nearest 0,01 g,  $5 \pm 0,1$  g of the sieved material (see clause 6).