INTERNATIONAL STANDARD

ISO 10349-3

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Photography — Photographic-grade chemicals — Test methods —

Part 3:
Determination of matter insoluble in ammonium hydroxide solution

Photographie — Produits chimiques de qualité photographique — Méthodes d'essai —

Partie 3: Détermination des matières insolubles dans une solution d'hydroxyde d'ammonium

Reference number
ISO 10349-3:1992(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10349-3 was prepared by Technical Committee ISO/TC 42, *Photography*.

ISO 10349 consists of the following parts, under the general title *Photography — Photographic-grade chemicals — Test methods*:

— *Part 1: General*

— *Part 2: Determination of matter insoluble in water*

— *Part 3: Determination of matter insoluble in ammonium hydroxide solution*

— *Part 4: Determination of residue after ignition*

— *Part 5: Determination of heavy metals and iron content*

— *Part 6: Determination of halide content*

— *Part 7: Determination of alkalinity or acidity*

— *Part 8: Determination of volatile matter*

— *Part 9: Reaction to ammoniacal silver nitrate*

— *Part 10: Determination of sulfide content*

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— *Part 11: Determination of specific gravity*

— *Part 12: Determination of density*

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Photography — Photographic-grade chemicals — Test methods —

Part 3:
Determination of matter insoluble in ammonium hydroxide solution

1 Scope

This part of ISO 10349 specifies a general test method for the determination of the content of matter insoluble in ammonium hydroxide solution (as a precipitate of calcium, magnesium and ammonium hydroxides) in photographic-grade chemicals.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 10349. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10349 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 10349-1:1992, *Photography — Photographic-grade chemicals — Test methods — Part 1: General.*

3 Hazards

See ISO 10349-1 for general hazard warnings and for details of the hazard code system used in this part of ISO 10349.

4 Reagents

See ISO 10349-1 for general requirements.

4.1 Ammonium oxalate solution

Dissolve 40 g of ammonium oxalate monohydrate, $(NH_4)_2C_2O_4 \cdot H_2O$ (DANGER <<S>> <B>), in 500 ml of water, then dilute to 1 litre.

4.2 Diammonium hydrogen phosphate solution, $(NH_4)_2HPO_4$.

Dissolve 10 g of diammonium hydrogen phosphate in 50 ml of water, then dilute to 100 ml.

4.3 Ammonium hydroxide solution, NH_4OH (1 + 9).

Slowly add 10 ml of ammonium hydroxide, $\rho \approx 0{,}91$ g/ml (DANGER: <C> <B>) to 90 ml of water and mix thoroughly.

4.4 Dilute ammonium hydroxide solution, NH_4OH (1 + 39).

Slowly add 25 ml of ammonium hydroxide, $\rho \approx 0{,}91$ g/ml (DANGER: <C> <B>) to 975 ml of water and mix thoroughly.

5 Apparatus

5.1 Ignition crucible, made of porcelain, alumina, platinum or quartz, of capacity 100 ml or greater.

5.2 Muffle furnace, capable of maintaining a temperature of up to 600 °C.

5.3 Filter paper, ashless, medium porosity, 10 µm to 15 µm retention.

5.4 Desiccator, containing a suitable desiccant.

6 Sampling

See ISO 10349-1.

7 Procedure

Weigh a test portion of 10,0 g ± 0,1 g and dissolve it in 75 ml of water. Add 5 ml of ammonium oxalate solution (4.1), 4 ml of diammonium hydrogen phosphate solution (4.2), and 10 ml of ammonium hydroxide solution (4.3). Allow the solution to stand for at least 8 h. If any precipitate is formed, filter it through filter paper (5.3) and wash with dilute ammonium hydroxide solution (4.4). Transfer the filter paper with precipitate to a prepared crucible (5.1) (600 °C ± 50 °C, heat to a constant weight, 0,001 g)[1] and carefully burn it over a gas burner. Incinerate the residue in the furnace (5.2) for the specified time and temperature. Cool the crucible in a desiccator (5.4), then reweigh it to the nearest 0,001 g.

8 Calculation

Calculate the content of matter insoluble in ammonium hydroxide solution, expressed as a percentage by mass, from the formula

$$100(m_2 - m_1)/m_0$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, of the crucible;

m_2 is the mass, in grams, of the crucible and residue after ignition.

9 Test report

The test report shall specify the method used and the test result obtained.

It shall also mention all operating details not specified in this part of ISO 10349, or regarded as optional, together with details of any incidents which may have influenced the test result.

The test report shall include all information necessary for the complete identification of the sample.

1) The notation system used for the drying of apparatus is described in ISO 10349-1.

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Descriptors: photography, photographic materials, photographic chemicals, tests, chemical analysis, determination of content, insoluble matter.

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