
International Standard



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Paints and varnishes — Determination of "soluble" metal content —

Part 7 : Determination of mercury content of the pigment portion of the paint and of the liquid portion of water-dilutable paints — Flameless atomic absorption spectrometric method

Peintures et vernis — Détermination de la teneur en métaux «solubles» — Partie 7 : Détermination de la teneur en mercure contenu dans le pigment et dans la fraction liquide des peintures hydrodiluable — Méthode par spectrométrie d'absorption atomique sans flamme

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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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3856/7 was prepared by Technical Committee ISO/TC 35, *Paint and varnishes*.

Paints and varnishes — Determination of "soluble" metal content —

Part 7: Determination of mercury content of the pigment portion of the paint and of the liquid portion of water-dilutable paints — Flameless atomic absorption spectrometric method

0 Introduction

This International Standard is a part of ISO 3856, *Paints and varnishes — Determination of "soluble" metal content*.

1 Scope and field of application

This part of ISO 3856 describes a flameless atomic absorption spectrometric method for the determination of the mercury content of the test solutions, prepared according to ISO 6713 or other suitable International Standards.

The method is applicable to paints having "soluble" mercury contents in the range of about 0,005 to 0,05 % (*m/m*), but the part of this method covering the examination of the liquid portion of the paint is restricted to water-dilutable paints.

CAUTION — The procedures described in this part of ISO 3856 are intended to be carried out by qualified chemists or by other suitably trained and/or supervised personnel. The substances and procedures used in this method may be injurious to health if adequate precautions are not taken. Attention is drawn in the text (see 4.6 and 4.7) to certain specific hazards. This part of ISO 3856 refers only to its technical suitability and does not absolve the user from statutory obligations relating to health and safety.

2 References

ISO 385/1, *Laboratory glassware — Burettes — Part 1: General requirements*.¹⁾

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

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*.

ISO 3696, *Water for laboratory use — Specifications*.²⁾

ISO 6713, *Paints and varnishes — Preparation of acid extracts from paints in liquid or powder form*.

3 Principle

Oxidation of the mercury compounds contained in the test solution obtained from the pigment portion of the paint or combustion with oxygen in an enclosed system of the evaporation residue of the test solution obtained from the liquid portion of water-dilutable paints.

Reduction of the mercury(II) compounds contained in the resulting solutions to elementary mercury. Entrainment of the mercury in a current of gas at ambient temperature and determination of the mercury, as the monoatomic vapour, by cold vapour (flameless) atomic absorption spectrometry at a wavelength in the region of 253,7 nm.

4 Reagents and materials

During the analysis, use only reagents of recognized analytical grade and water of at least grade 3 purity according to ISO 3696.

4.1 Oxygen, commercial grade, in a steel cylinder.

4.2 Tin(II) chloride dihydrate, 100 g/l solution.

Dissolve 25 g of tin(II) chloride dihydrate ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) in 50 ml of 35 % (*m/m*) (ρ approximately 1,18 g/ml) hydrochloric acid and dilute to 250 ml with water. Add a few granules of metallic tin and heat until any precipitate disappears. Ensure that a few granules of bright tin are present to stabilize the solution and, before use, that there is no precipitate.

1) At present at the stage of draft. (Partial revision of ISO/R 385-1964.)

2) At present at the stage of draft.