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# International Standard



# 7252

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## Paints and varnishes — Determination of total mercury — Flameless atomic absorption spectrometric method

*Peintures et vernis — Détermination du mercure total — Méthode par spectrométrie d'absorption atomique sans flamme.*

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## 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.

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 7252 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*.

# Paints and varnishes — Determination of total mercury — Flameless atomic absorption spectrometric method

## 1 Scope and field of application

This International Standard describes a flameless atomic absorption spectrometric referee method for the determination of the total mercury content in paints and related products.

The method is applicable to products having total mercury contents in the range of about 0,01 to 0,5 % (*m/m*).

NOTE — This method may also be applicable to products with a total mercury content of more than 0,5 % (*m/m*), provided that appropriate changes in reagent and test portion quantities are made.

## 2 References

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

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

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

ISO 1512, *Paints and varnishes — Sampling*.

ISO 1513, *Paints and varnishes — Examination and preparation of samples for testing*.

ISO 3696, *Water for laboratory use — Specifications*.<sup>2)</sup>

## 3 Principle

Combustion of the test portion with oxygen in an enclosed system.

Reduction of the mercury(II) compounds contained in the resulting solution 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*) ( $\rho$  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.

**4.3 Sulfuric acid**, 5 % (*m/m*).

**4.4 Nitric acid**, approximately 65 % (*m/m*) ( $\rho$  approximately 1,40 g/ml).

**4.5 Mercury**, standard stock solution containing 100 mg of Hg per litre.

Either

a) transfer the contents of an ampoule of a standard mercury solution containing exactly 0,1 g of Hg into a 1 000 ml one-mark volumetric flask, dilute to the mark with the sulfuric acid (4.3) and mix well;

or

b) weigh, to the nearest 0,1 mg, 0,135 4 g of mercury(II) chloride, dissolve in the sulfuric acid (4.3) in a 1 000 ml one-mark volumetric flask, dilute to the mark with the same sulfuric acid and mix well.

1 ml of this standard stock solution contains 0,1 mg of Hg.

**4.6 Mercury**, standard solution containing 1 mg of Hg per litre.

Prepare this solution on the day of use.

Pipette 10 ml of the standard stock solution (4.5) into a 1 000 ml one-mark volumetric flask, dilute to the mark with the sulfuric acid (4.3) and mix well.

1 ml of this standard solution contains 1  $\mu\text{g}$  of Hg.

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

2) At present at the stage of draft.