International Standard 6503

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Paints and varnishes — Determination of total lead — Flame atomic absorption spectrometric method

Peintures et vernis — Détermination du plomb total — Méthode par spectrométrie d'absorption atomique dans la 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.

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Contents

Paints and varnishes — Determination of total lead — Flame atomic absorption spectrometric method

1 Scope and field of application

This International Standard describes a flame atomic absorption spectrometric method for the determination of total lead in paints and related products.

The method is applicable to products having total lead contents in the range of about 0,01 to 2 % (m/m).

NOTE — This method may also be applicable to products with a total lead content of more than 2 % (m/m), but it should only be used when the precision does not exceed the appropriate values given in 7.2.

Two methods are given for the treatment of the test portion; the dry ashing method (clause 4) should be used as the referee method in cases of dispute.

For the determination of lead in the test solution, the dithizone spectrophotometric method specified in ISO 3856/1 may be used as an alternative method.

2 References

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

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.* [2)]

ISO 3856/1, *Paints and varnishes — Determination of "soluble" metal content — Part 1 : Determination of lead content — Flame atomic absorption spectrometric method and dithizone spectrophotometric method.*

ISO 5725, *Precision of test methods — Determination of repeatability and reproducibility by inter-laboratory tests.*

3 Principle

Decomposition of a test portion by either the dry ashing method (clause 4) or the wet oxidation method (clause 5), and determination of the lead by flame atomic absorption spectrometry.

4 Dry ashing method

4.1 Principle

Evaporation of a test portion to dryness and ashing at 475 °C to remove all organic matter. Extraction of any lead in the residue with hydrochloric acid.

4.2 Reagents

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

4.2.1 Sodium carbonate, anhydrous.

4.2.2 Magnesium carbonate.

4.2.3 Sulfur.

4.2.4 Liquid paraffin.

4.2.5 Sodium sulfide, 10 g/l solution.

4.2.6 Hydrochloric acid, approximately 180 g/l.

Add 450 ml of concentrated hydrochloric acid [36 % (m/m), ϱ approximately 1,18 g/ml] to an approximately equal amount of water and dilute to 1 000 ml.

4.2.7 Hydrochloric acid, approximately 18 g/l.

Add 100 ml of the hydrochloric acid (4.2.6) to water and dilute to 1 000 ml.

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

2) At present at the stage of draft.