



Paints and varnishes — Determination of “soluble” metal content —

Part 5: Determination of hexavalent chromium content of the pigment portion of the liquid paint or the paint in powder form — Diphenylcarbazide spectrophotometric method

Peintures et vernis — Détermination de la teneur en métaux «solubles» — Partie 5: Détermination du chrome hexavalent contenu dans le pigment de la peinture liquide ou de la peinture en poudre — Méthode spectrophotométrique à la diphénylcarbazide

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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 3856/5 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*.

ISO 3856/5 was first published in 1980. This second edition cancels and replaces the first edition, of which it constitutes a thorough revision.

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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 diphenylcarbazide spectrophotometric method for the determination of the “soluble” hexavalent chromium content of the hydrochloric acid extract of the pigment portion of the liquid paint or of the paint in powder form, prepared in accordance with sub-clause 8.2.3 of ISO 6713 or other suitable International Standards.

The method is applicable to paints having hexavalent chromium contents in the range of about 0,05 to 5 % (m/m).

Other methods can be used by agreement between the interested parties, provided that the methods are specific for hexavalent chromium but this spectrophotometric method is the referee method in cases of dispute.

2 References

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

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

Formation of a coloured complex from hexavalent chromium and diphenylcarbazide solution. After addition of orthophosphoric acid and sulfuric acid, spectrophotometric measurement of the colour at a wavelength in the region of 540 nm.

4 Reagents

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

4.1 Diphenylcarbazide, solution.

Dissolve 0,25 g diphenylcarbazide in a mixture of 50 ml of acetone and 50 ml of water.

4.2 Sodium hydroxide, $c(\text{NaOH}) = 2 \text{ mol/l}$ solution.

4.3 Sulfuric acid, $c(\text{H}_2\text{SO}_4) = 1 \text{ mol/l}$.

4.4 Orthophosphoric acid, approximately 85 % (m/m) (ρ approximately 1,69 g/ml).

4.5 Hydrochloric acid, $c(\text{HCl}) = 0,07 \text{ mol/l}$.

Use the hydrochloric acid, identical to that used for the preparation of the test solutions in accordance with ISO 6713. (See 6.2.)

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

2) At present at the stage of draft.