

Paints and varnishes - Determination of hiding power - Part 3: Determination of contrast ratio of light-coloured paints at a fixed spreading rate

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 6504-3:2007 sisaldab Euroopa standardi EN ISO 6504-3:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 20.04.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 6504-3:2007 consists of the English text of the European standard EN ISO 6504-3:2007.</p> <p>This document is endorsed on 20.04.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This part of ISO 6504 describes methods for determining the opacity (by contrast ratio measurement) given by paint films of white or light colours of tristimulus value greater than 25, applied at a spreading rate of to a black and white chart or to colourless transparent polyester foil. In the latter case, the tristimulus value is measured subsequently over black and white glass panels.</p>	<p>Scope: This part of ISO 6504 describes methods for determining the opacity (by contrast ratio measurement) given by paint films of white or light colours of tristimulus value greater than 25, applied at a spreading rate of to a black and white chart or to colourless transparent polyester foil. In the latter case, the tristimulus value is measured subsequently over black and white glass panels.</p>
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ICS 87.040

Võtmesõnad:

ICS 87.040

English Version

Paints and varnishes - Determination of hiding power - Part 3:
Determination of contrast ratio of light-coloured paints at a fixed
spreading rate (ISO 6504-3:2006)

Peintures et vernis - Détermination du pouvoir masquant -
Partie 3: Détermination du rapport de contraste des
peintures claires à un rendement surfacique déterminé
(ISO 6504-3:2006)

Beschichtungsstoffe - Bestimmung des Deckvermögens -
Teil 3: Bestimmung des Kontrastverhältnisses von hellen
Beschichtungen bei einer festgelegten Ergiebigkeit (ISO
6504-3:2006)

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Foreword

The text of ISO 6504-3:2006 has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 6504-3:2007 by Technical Committee CEN/TC 139 "Paints and varnishes", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

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Endorsement notice

The text of ISO 6504-3:2006 has been approved by CEN as EN ISO 6504-3:2007 without any modifications.

**Paints and varnishes — Determination of
hiding power —**

Part 3:

**Determination of contrast ratio of light-
coloured paints at a fixed spreading rate**

Peintures et vernis — Détermination du pouvoir masquant —

*Partie 3: Détermination du rapport de contraste des peintures claires à
un rendement surfacique déterminé*

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6504-3 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 6504-3:1998), which has been technically revised.

The main technical changes are:

- a) the unit of density of the wet coating material, used in Equation (3) in 7.6.2, has been corrected;
- b) the surface density (ρ_A) has been changed to mass per unit area of the dry coating (m'').

The opportunity has also been taken to revise the text editorially.

ISO 6504 consists of the following parts, under the general title *Paints and varnishes — Determination of hiding power*:

- *Part 1: Kubelka-Munk method for white and light-coloured paints*
- *Part 3: Determination of contrast ratio of light-coloured paints at a fixed spreading rate*

The subject originally intended to be covered by Part 2 is currently covered by ISO 2814, *Paints and varnishes — Comparison of contrast ratio (hiding power) of paints of the same type and colour*.

Introduction

Two techniques are available for test film preparation and measurement when determining the contrast ratio of paints:

- a) application to colourless, transparent polyester foil, the coated foil being subsequently placed in turn over black and white glass panels;
- b) direct application to black and white charts, for example Moresst charts.

Because different operators using the same draw-down device will obtain paint films differing significantly in thickness, an absolute method for the determination of opacity is required. Collaborative trials between groups of experts from a number of countries have shown that reproducible results can be obtained by determination of the contrast ratio corresponding to a precisely fixed spreading rate by interpolation between measurements at two or more measured film thicknesses. The spreading rate selected in this part of ISO 6504 is 20 m²/l (wet film thickness 50 μm), which is considered to be an average for brush application of a free-flowing paint on a smooth, non-porous surface. However, for particular types of paint normally used at other film thickness ranges, for example industrial enamels and printing inks, the interested parties may agree on another spreading rate.

Further collaborative trials have indicated that higher reproducibility is obtained with films spread on polyester foil than with films spread on a black and white chart, although the latter technique is simpler to operate. This part of ISO 6504 provides for both these options.

The methods are based on the observation that contrast ratio is an approximately linear function of reciprocal spreading rate, over a restricted film thickness range which also corresponds to that used for normal application of white or light-coloured paints. It is thus possible to interpolate graphically or by computation, with satisfactory accuracy, between results obtained with films of different thicknesses.

Because the wet film thickness is not always determined directly, the methods specified in this part of ISO 6504 involve the determination of dry film mass per unit area and calculation of the corresponding wet film thickness. In this latter calculation, values for wet paint density and percentage of non-volatile-matter content are required. Determination of these values by the methods specified in the relevant International Standards has been stipulated. However, it is recognized that, for certain types of paint, the non-volatile-matter determination in accordance with ISO 3251 does not correspond exactly to the mass changes in a film during drying under the conditions of the present test method. Any errors introduced into results by this discrepancy should be common to all laboratories, however, and should not affect comparisons of paints of similar types.

Paints and varnishes — Determination of hiding power —

Part 3: Determination of contrast ratio of light-coloured paints at a fixed spreading rate

1 Scope

This part of ISO 6504 describes methods for determining the opacity (by contrast ratio measurement) given by paint films of white or light colours of tristimulus value Y greater than 25, applied at a spreading rate of 20 m²/l to a black and white chart or to colourless transparent polyester foil. In the latter case, the tristimulus value Y is measured subsequently over black and white glass panels.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pycnometer method*

ISO 2811-2, *Paints and varnishes — Determination of density — Part 2: Immersed body (plummet) method*

ISO 2811-3, *Paints and varnishes — Determination of density — Part 3: Oscillation method*

ISO 2811-4, *Paints and varnishes — Determination of density — Part 4: Pressure cup method*

ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content*

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 7724-2, *Paints and varnishes — Colorimetry — Part 2: Colour measurement*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

spreading rate

surface area that can be covered by a given quantity of coating material to give a dried film of requisite thickness

NOTE 1 It is expressed in m²/l or m²/kg.

NOTE 2 See also practical spreading rate and theoretical spreading rate.

[ISO 4618]