
**Binders for paints and varnishes — Alkyd
resins —**

**Part 1:
General methods of test**

*Liants pour peintures et vernis — Résines alkydes —
Partie 1: Méthodes générales d'essai*



Reference number
ISO 6744-1:1999(E)

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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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 3.

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 part of ISO 6744 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 6744-1 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 10, *Test methods for binders for paints and varnishes*.

Together with the other parts (see below), this part of ISO 6744 cancels and replaces ISO 6744:1984, which has been technically revised.

ISO 6744 consists of the following parts, under the general title *Binders for paints and varnishes — Alkyd resins*:

- *Part 1: General methods of test*
- *Part 2: Determination of phthalic anhydride content*
- *Part 3: Determination of unsaponifiable matter content*
- *Part 4: Determination of fatty acid content*

Binders for paints and varnishes — Alkyd resins —

Part 1: General methods of test

1 Scope

This part of ISO 6744 describes general methods of test for alkyd resins for use in paints, varnishes and similar products. It is also applicable to those solutions and similar preparations made from alkyd resins that are intended for use as binders for paints and varnishes.

The test methods to be used for an individual alkyd resin shall be the subject of agreement between the interested parties.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 6744. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 6744 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1523:1983, *Paints, varnishes, petroleum and related products — Determination of flashpoint — Closed cup equilibrium method.*

ISO 2431:1993, *Paints and varnishes — Determination of flow time by use of flow cups.*

ISO 2811-1:1997, *Paints and varnishes — Determination of density — Part 1: Pyknometer method.*

ISO 3219:1993, *Plastics — Polymers/resins in the liquid state or as emulsions or dispersions — Determination of viscosity using a rotational viscometer with defined shear rate.*

ISO 3251:1993, *Paints and varnishes — Determination of non-volatile matter of paints, varnishes and binders for paints and varnishes.*

ISO 3679:1983, *Paints, varnishes, petroleum and related products — Determination of flashpoint — Rapid equilibrium method.*

ISO 3681:1996, *Binders for paints and varnishes — Determination of saponification value — Titrimetric method.*

ISO 3682:1996, *Binders for paints and varnishes — Determination of acid value — Titrimetric method.*

ISO 4629:1996, *Binders for paints and varnishes — Determination of hydroxyl value — Titrimetric method.*

ISO 4630:1997, *Binders for paints and varnishes — Estimation of colour of clear liquids by the Gardner colour scale.*

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ISO 6271:1997, *Clear liquids — Estimation of colour by the platinum-cobalt scale.*

ISO 6744-2:1999, *Binders for paints and varnishes — Alkyd resins — Part 2: Determination of phthalic anhydride content.*

ISO 6744-3:1999, *Binders for paints and varnishes — Alkyd resins — Part 3: Determination of unsaponifiable matter content.*

ISO 6744-4: 1999, *Binders for paints and varnishes — Alkyd resins — Part 4: Determination of fatty acid content.*

ISO 15716:—¹⁾, *Binders for paints and varnishes — Storage stability.*

ASTM D 6166-97, *Standard Test Method for Color of Naval Stores and Related Products (Instrumental Determination of Gardner Color).*

3 Terms and definitions

For the purposes of this part of ISO 6744, the following terms and definitions apply.

3.1

alkyd resin

synthetic resin resulting from the polycondensation of polyacids and fatty acids (or oils) with polyhydric alcohols

3.2

modified alkyd resin

alkyd resin, modified in order to obtain specific properties, for example with rosin acids, phenolic resins, vinyl toluene, styrene, isocyanates, polyamides or acrylic, epoxy or silicone compounds

NOTE An alkyd resin based on tall-oil fatty acids containing not more than 4 % of rosin acids is regarded as an "alkyd resin", not as a "modified alkyd resin".

4 Classification

Alkyd resins are classified into the following groups:

- a) according to the content of fatty acid or oil (content of oil calculated as the triglyceride portion of the non-volatile matter):

short-oil alkyd resins: less than about 40 %

medium-oil alkyd resins: about 40 % to 60 %

long-oil alkyd resins: above about 60 %

- b) according to the content of dibasic acid (see ISO 6744-2);
c) according to the modifying component (see 3.2).

1) To be published.

5 Properties and methods of test

Unless otherwise agreed, the properties to be measured and the test methods to be used shall be as given in Table 1.

Table 1 — Properties and methods of test

Property	Method of test
Colour	ASTM D 6166 (Spectrophotometric test) ISO 6271 (Pt-Co scale) ISO 4630 (Gardner scale)
Flow time	ISO 2431
Viscosity	ISO 3219
Non-volatile matter ^a	ISO 3251
Flashpoint ^a	ISO 1523 ISO 3679
Acid value ^b	ISO 3682
Hydroxyl value ^b	ISO 4629
Saponification value	ISO 3681
Storage stability	ISO 15716
Turbidity	To be agreed between the interested parties. An International Standard is in preparation (ISO 15715).
Density	ISO 2811-1
Phthalic anhydride content ^c	ISO 6744-2
Unsaponifiable matter ^c	ISO 6744-3
Fatty acid content ^{c, d}	ISO 6744-4
<p>^a For alkyd resin solutions only.</p> <p>^b The acid and hydroxyl values shall be calculated on the basis of the non-volatile matter of the resin solution.</p> <p>^c These methods are not applicable to alkyd resins that contain benzoic acid or polybasic acids other than <i>o</i>-phthalic and/or are modified by compounds such as rosin acids, vinyl toluene, styrene, isocyanates or acrylic, epoxy or silicone compounds.</p> <p>^d Rosin acids will be found in tall-oil fatty acids together with the fatty acids. Calculation of these rosin acids as part of the fatty acids shall be subject to agreement between the interested parties.</p>	

6 Test report

The test report shall contain at least the following information:

- a) a reference to this part of ISO 6744 (ISO 6744-1);
- b) all details necessary to identify the product tested;
- c) the results of the tests, and the methods used;
- d) any deviation, by agreement or otherwise, from the procedures specified;
- e) the dates of the tests.

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