
International Standard 6744

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Binders for paints and varnishes — Alkyd resins — General methods of test

Liants pour peintures et vernis — Résines alkydes — Méthodes générales d'essai

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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 6744 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*.

Binders for paints and varnishes — Alkyd resins — General methods of test

1 Scope and field of application

This International Standard 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 applied to an individual alkyd resin shall be the subject of agreement between the interested parties.

The method given in annex A is only applicable to those alkyd resins which contain orthophthalic acid as the polybasic acid. The methods described in annexes A, B and C are not applicable to modified alkyd resins (3.2) and those resins containing benzoic acid.

2 References

ISO 842, *Raw materials for paints and varnishes — Sampling.*

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

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

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity.*

ISO 3219, *Polymers in the liquid, emulsified or dispersed state — Determination of viscosity with a rotational viscometer working at defined shear rate.*

ISO 3251, *Paint media — Determination of volatile and non-volatile matter.*

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

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

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

ISO 3696, *Water for laboratory use — Specifications.*¹⁾

ISO 4629, *Paint media — Determination of hydroxyl value — Titrimetric method.*

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

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

3 Definitions

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, 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:

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 annex A);
- c) according to the modifying component (see 3.2).

5 Sampling

Take a representative sample of the product to be tested as described in ISO 842.

¹⁾ At present at the stage of draft.

* Content of oil calculated as the triglyceride portion of the non-volatile matter.

6 Methods of test

Table — Properties and methods of test

Property	Method of test
Colour	ISO 6271 (Platinum-cobalt scale) ISO 4630 (Gardner colour scale)
Flow time ¹⁾	ISO 2431
Viscosity	ISO 3219 or ISO 3104 or other agreed methods
Non-volatile matter ¹⁾	ISO 3251
Flashpoint ¹⁾	ISO 1523 ISO 3679
Acid value	ISO 3682 ²⁾
Hydroxyl value	ISO 4629 ²⁾
Phthalic anhydride content	Annex A ³⁾
Unsaponifiable matter	Annex B ³⁾
Fatty acid content	Annex C ³⁾⁴⁾

1) For alkyd resin solutions only.

2) The acid and hydroxyl values shall be calculated on the basis of the non-volatile matter of the resin solution.

3) These methods are not applicable to alkyd resins that contain benzoic acid and polybasic acids other than *o*-phthalic and/or are modified by compounds such as rosin acids, vinyl toluene, styrene, isocyanates, acrylic, epoxy, or silicone compounds. The general test methods to be specified for these excluded modified alkyd resins will be the subject of a future International Standard.

4) Rosin acids as part of tall oil fatty acids will be found together with the fatty acids. The calculation of these rosin acids as a part of fatty acids is to be agreed between the interested parties.

7 Test report

The test report shall contain at least the following information:

- a) the type and identification of the product tested;
- b) a reference to this International Standard (ISO 6744);
- 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.