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# International Standard



# 3682

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## **Binders for paints and varnishes — Determination of acid value — Titrimetric method**

*Liants pour peintures et vernis — Détermination de l'indice d'acide — Méthode titrimétrique*

**Second edition — 1983-03-01**

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**Descriptors :** paints, varnishes, binders (materials), chemical tests, determination, acid number, volumetric analysis.

Price based on 2 pages

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

International Standard ISO 3682 was developed by Technical Committee ISO/TC 35, *Paints and varnishes*.

The first edition (ISO 3682-1976) had been approved by the member bodies of the following countries:

Austria	Iran	Romania
Brazil	Ireland	South Africa, Rep. of
Bulgaria	Israel	Spain
Canada	Mexico	Sweden
Chile	Netherlands	Switzerland
France	New Zealand	Turkey
Germany, F.R.	Poland	United Kingdom
India	Portugal	Yugoslavia

The member body of the following country had expressed disapproval of the document on technical grounds:

Italy

This second edition, which cancels and replaces ISO 3682-1976, incorporates draft Amendment 1, which was circulated to the member bodies in December 1981 and has been approved by the member bodies of the following countries:

Australia	Israel	Romania
Austria	Italy	South Africa, Rep. of
Belgium	Kenya	Sri Lanka
Brazil	Korea, Rep. of	Sweden
Canada	Netherlands	Switzerland
China	New Zealand	United Kingdom
Czechoslovakia	Norway	USSR
Egypt, Arab Rep. of	Poland	
Hungary	Portugal	

The member body of the following country expressed disapproval of the document on technical grounds:

Germany, F.R.

# Binders for paints and varnishes — Determination of acid value — Titrimetric method

## 1 Scope and field of application

This International Standard specifies a titrimetric method for the determination of the acid value of binders for paints and varnishes. It is not applicable to phenolic resins.

## 2 References

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

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

## 3 Definition

For the purpose of this International Standard, the following definition applies.

**acid value:** The number of milligrams of potassium hydroxide (KOH) required to neutralize the free acids in 1 g of the non-volatile matter of the product.

NOTE — If free acid anhydrides are present in the binder, as in the case of certain polyester resins, the alcoholic potassium hydroxide solution reacts only partially with the anhydrides; this, however, is generally of little importance with most binders because of the small amount of free anhydrides present.

## 4 Sampling

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

## 5 Reagents

During the analysis, use only reagents of recognized analytical grade.

**5.1 Solvent mixture,** consisting of 2 parts by volume of toluene and 1 part by volume of ethanol, at least 95 % (V/V),<sup>1)</sup> if not otherwise agreed or specified. Neutralize the solvent mixture with the potassium hydroxide solution (5.2) prior to use.

**5.2 Potassium hydroxide,** standard volumetric solution,  $c(\text{KOH}) = 0,1 \text{ mol/l}$ , in ethanol 95 % (V/V),<sup>1)</sup> or in methanol, free from carbonates, standardized against potassium hydrogen phthalate.

Check the concentration of this solution on the day of use.

**5.3 Phenolphthalein,** indicator solution, 10 g/l in ethanol 95 % (V/V), methanol or 2-propanol.

NOTE — Other suitable indicators may be used, for example bromothymol blue, 10 g/l in ethanol 95 % (V/V), methanol or 2-propanol.

## 6 Apparatus

Ordinary laboratory apparatus and

**6.1 Conical flask,** capacity 250 ml.

**6.2 Burette,** capacity 50 ml.

If required:

**6.3 Device for potentiometric titration,** with glass electrode and reference electrode.

**6.4 Magnetic stirrer.**

## 7 Procedure

### 7.1 Test portion

The mass of the test portion depends on the acid value to be expected (see the table for guidance in selecting the appropriate mass). This mass shall be chosen so that the volume of the potassium hydroxide solution (5.2) is in the range 10 to 30 ml.

Weigh, to the nearest 1 mg, the test portion into the conical flask (6.1).

Table

Expected acid value	Mass of test portion
mg KOH/g	g
up to 10	10
above 10 to 25	5
above 25 to 50	2,5
above 50 to 150	1
above 150	0,5

1) If denatured alcohol, or alcohol of other quality, is used its suitability for the test should be checked.