
**Binders for paints and varnishes —
Polyisocyanate resins — General
methods of test**

*Liants pour peintures et vernis — Résines de polyisocyanate —
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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

ISO 11909 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 10, *Test methods for binders for paints and varnishes*, in collaboration with CEN Technical Committee CEN/TC 139, *Paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 11909:1996), which has been editorially revised and the normative references updated.

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

1 Scope

This International Standard details general test methods for polyisocyanate resins and solutions of polyisocyanate resins intended for use as binders in paints, varnishes and related products.

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 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — One-mark pipettes*

ISO 1523, *Determination of flash point — Closed cup equilibrium method*

ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pyknometer 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 3219, *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, *Paints, varnishes and plastics — Determination of non-volatile-matter content*

ISO 3679, *Determination of flash point — Rapid equilibrium closed cup method*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4630-1, *Clear liquids — Estimation of colour by the Gardner colour scale — Part 1: Visual method*

ISO 4630-2, *Clear liquids — Estimation of colour by the Gardner colour scale — Part 2: Spectrophotometric method*

ISO 6271-1, *Clear liquids — Estimation of colour by the platinum-cobalt scale — Part 1: Visual method*

ISO 6271-2, *Clear liquids — Estimation of colour by the platinum-cobalt scale — Part 2: Spectrophotometric method*

ISO 10283, *Binders for paints and varnishes — Determination of monomeric diisocyanates in polyisocyanate resins*

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 isocyanate resin
 synthetic resin, containing free or blocked isocyanate groups, based on aromatic, aliphatic or cyclo-aliphatic isocyanates

[ISO 4618:2006]

4 Properties and test methods

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 test methods

Property	Test method
Colour	ISO 6271-1 or ISO 6271-2 ISO 4630-1 or ISO 4630-2
Viscosity	ISO 3219
Non-volatile matter	ISO 3251, together with Table 2 below
Flashpoint	ISO 1523 or ISO 3679
Density	ISO 2811-1 to 2811-4
Isocyanate content	Annex A of this International Standard
Monomeric diisocyanate content	ISO 10283

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Table 2 — Test conditions for the determination of non-volatile matter

Resin basis ^a	Period of heating h	Test temperature ^b °C
HDI biuret	1	80
HDI cyanurate	1	105
TDI and MDI polyisocyanates, adducts and prepolymers	1	125
IPDI polyisocyanates	1	150
^a HDI = Hexamethylene diisocyanate TDI = Toluene diisocyanate MDI = Diphenyl-4-methane-4,4'-diisocyanate IPDI = Isophorone diisocyanate ^b For binders dissolved in highly volatile solvents, a lower temperature may be used.		