International Standard

ISO 15715

Binders for paints and varnishes — Determination of turbidity

Liants pour peintures et vernis — Détermination de la turbidité

Second edition
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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paints and varnishes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15715:2003), which has been technically revised.

The main changes are as follows:

— Clause 2 has been added;

— the principle (new 4.1) has been amended by a description of influences which can affect turbidity measurements;

— formazin turbidity units (FTU) has been changed to formazin nephelometric units (FNU), to be in line with ISO 7027-1:2016;

— the optical path length of the tube has been changed in 5.2;

— in Clause 6, a reference to commercially available calibration standards has been added as well as a reference to room temperature for storing the calibration standards;

— a reference to ISO 7027-1 has been added for precision;

— the expression of results in Clause 8 has been reduced to three classes, i.e. the former classes 10 FNU to less than 100 FNU and greater or equal to 100 FNU have been combined to one class, to report the result to the nearest 1 FNU;

— the normative references have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The measurement of the turbidity of liquids can be carried out visually or using an instrument, but visual methods can be subjective. This method instrumentally measures the scattering of light by the insoluble matter in a liquid and therefore gives an objective determination of turbidity.

Turbidity in liquids is caused by the presence of undissolved matter (i.e. non-settling flocculation, gels or other suspended matter such as particles or droplets). In the case of finely dispersed undissolved matter, the turbidity can be determined by measuring the intensity of the light which is scattered by the particles when a beam of light is passed through the liquid.

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Binders for paints and varnishes — Determination of turbidity

1 Scope

This document specifies an instrumental method for determining the turbidity of clear liquids. It is applicable to resins and resin solutions, solvents, clear coating materials, monomers and any other liquids where clarity is specified.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4618, *Paints and varnishes — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
turbidity
reduction in the transparency of a liquid caused by the presence of undissolved matter

4 Principle

4.1 Principle of the method

A liquid sample is placed in an optical cell or glass tube and the turbidity measured on a ratio-recording turbidimeter. The instrument is calibrated in formazin nephelometric units (FNU). The turbidity of the sample can thus be read directly in FNU. The readings are therefore insensitive to colour.

Measurements of turbidity can be affected by the presence of dissolved light-absorbing substances (substances imparting colour). Such effects can be minimized, however, by performing measurements at wavelengths greater than 800 nm. Only carbon black and a blue colour, which can be found in certain polluted waters, slightly affects measurements of turbidity in this region of the spectrum. Air bubbles can also interfere with measurements, but such interference can be minimized by careful handling of the samples. Investigations should be conducted to verify whether and to what extent particular problems require the specification of additional marginal conditions.

4.2 General principles of turbidity measurement

A liquid sample coloured by dissolved substances is a homogeneous system that only attenuates radiation passing through the sample. A sample containing undissolved substances not only attenuates the incident

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