INTERNATIONAL STANDARD

ISO 13803

Second edition
2014-10-01

Paints and varnishes — Determination of haze on paint films at 20°

Peintures et vernis — Détermination du voile sur des feuils de peinture à 20°

Reference number
ISO 13803:2014(E)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 13803:2000), which has been technically revised. The main technical changes are:

a) the symbols have been adapted to the revision of ISO 2813;

b) an introduction and a principle clause have been added;

c) the supplementary test conditions have been included in the test report;

d) the normative references have been updated.

Introduction

High quality surfaces are expected to have a clear and brilliant appearance. Microstructures can cause a milky appearance. This effect is described as haze. A high gloss surface with microscopic texture has diffused light with low intensity adjacent to the main direction of reflection. The majority of the incident light is reflected in the specular direction which will make the surface appear high glossy with image forming qualities, but with a milky haziness on top of it.

The phenomenon haze can be seen on high gloss surfaces only. Therefore, the 20° geometry is used like with a gloss meter. The aperture range of a 20° gloss meter is 1,8°. Two additional sensors next to the gloss detector measure the intensity of the diffused light responsible for haze. Thus, the specularly reflected and the scattered light are measured simultaneously. In order to better correlate with the visual perception, haze is displayed in a logarithmic scale – the lower the haze reading the better the surface.

Paints and varnishes — Determination of haze on paint films at 20°

1 Scope

This International Standard specifies a test method for determining the haze of coatings. The method is suitable for the haze measurement of non-textures coatings on plane, opaque substrates.

The use of the 20° geometry means that the method is closely related to the measurement of gloss at 20° in ISO 2813. The application of this method is intended to give improved differentiation between high-gloss surfaces, for example in the field of assessment of dispersion characteristics.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1514, *Paints and varnishes — Standard panels for testing*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 2813, *Paints and varnishes — Determination of gloss value at 20°, 60°and 85°*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
haze
milky opalescence in high-gloss or clear coatings

[SOURCE: ISO 4618:2014, 2.137]

3.2
geometry
identification of a method of haze measurement using a specified angle with assigned apertures

[SOURCE: ISO 2813:2014, 3.2, modified — the term “gloss” has been replaced with “haze”.]

3.3
haze value
ratio of the luminous flux reflected and diffusely scattered from an object adjacent to the specular direction for a specified source and receptor angle to the luminous flux reflected from glass with a refractive index of 1,567 in the specular direction, this glass being assigned the value of 100 on the linear haze scale

Note 1 to entry: The measurement of haze value is related to the measurement of gloss in accordance with ISO 2813.

4 Principle

With a reflectometric apparatus haze values are determined on coated surfaces, correlating with the visual haze perception.

The method of haze measurement is specified by the following parameters:

— measuring angles;

— field stop apertures;

— spectral adaptation;

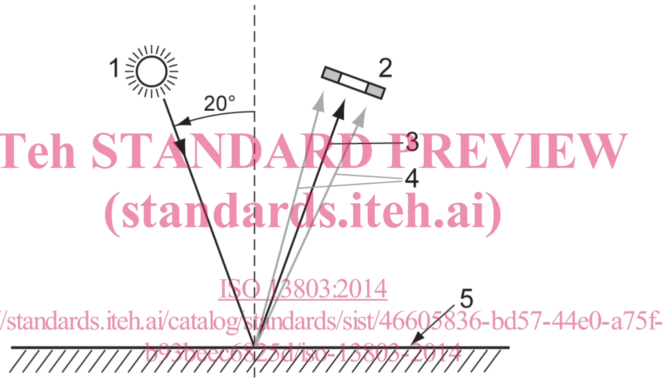
— reference refractive index.

5 Apparatus and materials

5.1 Hazemeter

5.1.1 General

The hazemeter shall consist of a light source and a lens that directs a parallel beam of light onto the surface under test, plus a receptor housing containing a lens, a field stop and a photoelectric cell to receive the required cone of reflected light. The source of the hazemeter is shown in Figure 1.



Key

1 light source

2 sensor

3 gloss

4 haze

5 test surface

Figure 1 — Measuring angle of 20°

5.1.2 Geometries

The axis of the incident beam shall be at an angle $\alpha_1 = (20{,}0 \pm 0{,}1)°$ (see Figure 1) to the normal to the surface under test. With a flat piece of polished black glass or a front reflecting mirror instead of the test panel position, the source field stop shall be reproduced at the centre of the receptor field stop (see Figure 3).

The optical axis of the receptor shall be coincident with the mirror image of the axis of the incident beam to within ± 0,1°, i.e. the condition $|\alpha_1 - \alpha_2| < 0{,}1°$ shall be fulfilled (see Figure 2).

The dimensions of the source aperture and the receptor aperture and the permissible tolerances shall be as indicated in Table 1.

In order to average out the entire surface, the width of the illuminated area on the test panel shall be significantly larger than possible surface irregularities: a generally accepted value is 10 mm.

The angular dimensions of the receptor field stop shall be measured from the receptor lens.

There shall be no vignetting of rays that lie with the specified angular fields.

The photoelectric cell shall give a reading proportional to the light flux passing the receptor field stop, to a deviation within 1 % of the full-scale reading