

INTERNATIONAL STANDARD

ISO
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Plastics pipes and fittings — Opacity — Test method

iTeh *Standards en matière de plastiques — Opacité — Méthode d'essai*
STANDARD PREVIEW
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Reference number
ISO 7686:1992(E)

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.

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.

International Standard ISO 7686 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Sub-Committee SC 5, *General properties of pipes, fittings and valves of plastic materials and their accessories - Test methods and basic specifications*.

Annex A of this International Standard is for information only.

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Introduction

The method of test specified in this International Standard is a simple method for general use. However, it is not sufficiently accurate for certain products, such as those for the supply of hot water. A more accurate method will be developed in the near future.

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Plastics pipes and fittings — Opacity — Test method

1 Scope

This International Standard specifies a method for the determination of the opacity of plastics pipes and fittings.

It lays down the maximum acceptable limit for the light which may pass through the wall of the pipe or fitting, if the product standard specifies that they shall be opaque.

2 Principle

The light flux passing through a test piece cut from a pipe or fitting is measured as a percentage of the incident light flux on the test piece.

3 Apparatus

3.1 Adjustable-power arc or incandescent lamp, the intensity of light of which is constant to ± 1 %. When an arc lamp is used, a filter shall be provided to limit the spectrum to 540 nm to 560 nm.

3.2 Diaphragm and optical lenses, adjusted to obtain a parallel-sided and symmetrical incident beam. The diaphragm shall be circular.

3.3 Support, arranged so that it maintains the surface of the test piece to be examined perpendicular to the optical axis and at a fixed distance from the diaphragm (3.2).

3.4 Photoelectric cell, used in such a way that the response of the reading or recording apparatus is a linear function of the light intensity, from the maximum intensity I_0 down to at least 0,01 I_0 .

4 Test pieces

Take a section of convenient length from a pipe, or a piece of suitable dimensions and the original thickness from the wall of a fitting.

5 Procedure

5.1 Calibration

Check the following:

- a) that the reading given by the photoelectric cell is zero in the absence of light, ensuring that the photoelectric cell is protected from incident daylight;
- b) that the reading is 100 % in the light emitted by the luminous source in the absence of the test piece;
- c) the accuracy of the reading using standard lenses that give an absorption percentage of about 0,2 %;
- d) the alignment of the installation.

5.2 Measurement

5.2.1 Adjust the apparatus to obtain a maximum reading, carefully arranging the light sensor in such a way that it receives the maximum light energy, and record the maximum reading D_M .

5.2.2 Place the test piece on the support (3.3) and position the whole, ensuring that the test piece is positioned centrally with respect to the light beam and perpendicular to it.

5.2.3 Read the maximum reading D produced by the light beam. This reading corresponds to the light which has passed through the wall of the test piece.

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6 Calculation and expression of results

Calculate the percentage of the light which has passed through the wall of the test piece, using the formula

$$\frac{D}{D_M} \times 100$$

where

D is the maximum reading produced by the light from the source which has passed through the wall of the test piece;

D_M is the maximum reading produced directly by the light from the source.

7 Test report

The test report shall include the following information:

- a) a reference to this International Standard;
- b) all details necessary to identify the test piece;
- c) the percentage of light that passed through the wall of the test piece and whether or not the result complies with the specification given in annex A;
- d) any factors which may have affected the results, such as any incidents or any operating details not specified in this International Standard;
- e) the date of the test.

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Annex A (informative)

Basic specification

If the product standard specifies that the pipe or the fitting shall be opaque, the percentage of light which passes the wall of the pipe or the fitting, determined in accordance with this International Standard, should not exceed 0,2 %.

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