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International Standard 2508

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Unplasticized polyvinyl chloride (PVC) pipes — Water absorption — Determination and specification

Tubes en polychlorure de vinyle (PVC) non plastifié — Absorption d'eau — Détermination et spécification

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 2508 was developed by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*.

This second edition was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It results from the combination into one single document of International Standard ISO 2508-1974 and of draft International Standard ISO/DIS 4442, which was circulated to the member bodies in July 1977.

It cancels and replaces the first edition of ISO 2508, which had been approved by the member bodies of the following countries :

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

South Africa, Rep. of

It also cancels draft International Standard ISO/DIS 4442, which had been approved by the member bodies of the following countries :

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Austria	Ireland	Romania
Belgium	Israel	South Africa, Rep. of
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The member body of the following country had expressed disapproval of the document on technical grounds :

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Unplasticized polyvinyl chloride (PVC) pipes — Water absorption — Determination and specification

1 Scope and field of application

This International Standard specifies the method for the determination of the water absorption of unplasticized polyvinyl chloride (PVC) pipes and also specifies the maximum permissible value for this water absorption.

This International Standard applies to all unplasticized pipes whatever their purpose.

2 Test method

2.1 Principle

Immersion of conditioned test pieces of given shape and size in water maintained at boiling point for 24 h.

Weighing before and after immersion, and calculating the mass variation per unit area of surface.

2.2 Immersion liquids

2.2.1 Distilled water, cold.

2.2.2 Distilled water, maintained at boiling point in the heating bath (see 2.3.3).

2.2.3 Acetic acid, glacial, 98 to 100 % (m/m).

2.3 Apparatus

2.3.1 Balance, accurate to within 0,1 mg.

2.3.2 Desiccator, silica gel.

2.3.3 Heating bath, in which distilled water may be maintained at boiling point.

2.3.4 Receptacles, of suitable size to accommodate the test pieces.

2.4 Preparation of test pieces

2.4.1 Each test piece shall conform to the following specifications :

2.4.1.1 Pipes with outside diameters up to 32 mm. A length of pipe such that the sum of the inner and outer surface areas is approximately 50 cm^2.

2.4.1.2 Pipes with outside diameters greater than 32 mm. A portion of pipe cut so that it has two generating lines approximately 5 cm in length and describes an arc of approximately 5 cm in length.

2.4.2 Finish the cut surface with a fine file, in order to obtain a smooth surface.

2.4.3 Prepare three test pieces from each pipe to be tested.

2.5 Procedure

2.5.1 Measure the dimensions of each test piece to within 0,1 mm, except with regard to dimensions of inner and outer arcs which shall be measured to within 0,5 mm.

Calculate the total surface area, as the sum of the areas of the inner surface, the outer surface and the surface of the cut edges.

2.5.2 Immerse the test pieces in the acetic acid at 23 ± 2 °C for 1 min and then in the cold distilled water for 1 h.

2.5.3 Wipe the test pieces with filter paper and place them in the desiccator for 2 h at a temperature of 23 ± 2 °C.

Weigh each test piece to within 0,1 mg.

2.5.4 Immerse the test pieces in the distilled water maintained at boiling point for 24 h, then allow them to cool for 15 min in the cold distilled water.

2.5.5 Wipe the test pieces once more with filter paper. Place them in the desiccator for 2 h at a temperature of 23 ± 2 °C.

Weigh each test piece to within 0,1 mg.

2.6 Expression of results

2.6.1 For each test piece, calculate the water absorption, a, in grams per square metre, using the formula :

$$a = \frac{m_1 - m_0}{A}$$

where

m_0 is the mass, in grams, of the test piece before the test;

m_1 is the mass, in grams, of the test piece after the test;

A is the total surface area, in square metres, of the test piece (see 2.5.1).

2.6.2 Note the arithmetic mean of the values obtained for each of the test pieces as the water absorption of the pipe.

2.7 Test report

The test report shall include the following information :

a) reference to this International Standard;

b) full identification of the pipe tested;

c) the dimensions of the test pieces;

d) individual values for the water absorption and the mean value, calculated as shown in 2.6;

e) any changes in the appearance of the test pieces during the test, or immediately afterwards;

f) all operating details not specified in this International Standard, as well as any incidents likely to have influenced the results.

3 Specification

Under the conditions of test specified in clause 2, the value of the water absorption shall not exceed 40 g/m^2.