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Testing methods for rubber
and plastics hoses—
Part 10 : Determination
of transmission of liquids
through hose walls

ICS 83.140.40

Descriptors : synthetic rubber, plastics, flexible pipes, hose connectors, testing,
liquids, permeability, permeability measurement

Reference number : JIS K 6330-10 : 1998 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

In order to conform to the corresponding International Standard, this part has been established based on **ISO 8308 : 1993**.

Attention shall be drawn to the possibility that a part of this Standard may conflict with a patent right, application for a patent right after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent right after opened, utility model right or application for registration of utility model after opening to the public which have the technical properties of this kind.

JIS K 6330 *Testing methods for rubber and plastics hoses* consists of the following 10 parts:

Part 1: *Methods of measurement of dimensions*

Part 2: *Hydrostatic testing*

Part 3: *Determination of suction resistance*

Part 4: *Sub-ambient temperature flexibility tests*

Part 5: *Determination of electrical resistance*

Part 6: *Determination of adhesion between components*

Part 7: *Assessment of ozone resistance under static conditions*

Part 8: *Hydraulic-pressure impulse test without flexing*

Part 9: *Bending tests*

Part 10: *Determination of transmission of liquids through hose walls*

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Testing methods for rubber and plastics hoses— Part 10 : Determination of transmission of liquids through hose walls

Introduction This Japanese Industrial Standard has been prepared based on the second edition of **ISO 8308**, *Rubber and plastics hoses and tubing—Determination of transmission of liquids through hose and tubing walls*, without any modification in technical content.

Further, the underlined parts with dots are the items not included in the original International Standard.

1 Scope This Japanese Industrial Standard specifies two testing methods of transmission of liquids for rubber and plastics hoses (hereafter referred to as “hose”).

Method A—applied to a practical comparative test, simulating working condition, for all sizes and constructions.

Method B—applied for the hoses of inside diameter 16 mm or under.

Remarks : The International Standard corresponding to this Standard is shown as follows:

ISO 8308 : 1993 *Rubber and plastics hoses and tubing—Determination of transmission of liquids through hose and tubing walls*

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The normative references without the indication of the year of coming into effect (or the year of publication) apply limiting only to the most recent edition (including the amendment).

JIS K 6250 *General rules of physical testing methods for rubber, vulcanized or thermoplastic*

Remarks : The quoted items from **ISO 471** : 1983, *Rubber—Standard temperature, humidities and times for the conditioning and testing of test pieces* are equivalent to the pertinent items of this Standard.

JIS K 6330-1 *Testing methods for rubber and plastics hoses—Part 1 : Methods of measurement of dimensions*

Remarks : The quoted items from **ISO 4671** : 1984, *Rubber and plastics hose and hose assemblies—Methods of measurement of dimensions* are equivalent to the pertinent items of this Standard.

JIS R 3505 *Volumetric glassware*

Remarks : The quoted items from **ISO 4788** : 1980, *Laboratory glassware—Graduated measuring cylinders* are equivalent to the pertinent items of this Standard.

3 Principle

3.1 Method A This method is carried out on a hose connected to the test apparatus fitted with equipment to fill and measure a charged volume of a volatile liquid. In this method, the test apparatus connecting a hose is put under pressure and the change in volume measured every 24 h intervals until the change has become constant with time, i.e. an equilibrium state has been reached. The test result is this steady-state transmission rate, expressed as the volume of liquid lost per hour per unit inside surface area of the hose.

3.2 Method B This method uses a pressureless reservoir. One end of a hose is attached to the reservoir and the other end is plugged. The reservoir is partially filled with test liquid and sealed. The mass of hose is weighed at the start of the test under the condition of being assembled, and once every 24 h for eight days. The test result is the maximum mass of liquid lost in any one 24 h period per unit inside surface area of the hose.

Remarks : This method can clarify the loss of mass by transmission of test liquid and minimize selective permeation of components in a fuel mixture by agitating the test liquid after measuring volume.

4 Test liquid The test liquid specified in the product standard concerned shall be used.

5 Method A

WARNING : Because of the generation of potentially hazardous vapours, this test shall be carried out in a well ventilated area.

5.1 Apparatus The apparatus is connected to a pressure source of nitrogen gas, and the gas pressure is controlled by a regulator and pressure gauge. It is essential that the test apparatus shall be provided with a safety valve. The sample is fixed vertically and is connected to the apparatus at the top via a measuring cylinder specified in **JIS R 3505** and at the bottom via a charging pipe (refer to Fig. 1).