

KES

Testing Method for the Rubber Hose

KES T – K008

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1. Scope of Application

This standard determines the testing method for rubber hose (Hose from now on).

Remark : The units and numbers in { } indicate SI for the reference.

2. Measurement and Testing Items

2.1 Measurement for dimensions of hose

- (1) Measurement of Inside diameter
- (2) Measurement of Outside diameter
- (3) Measurement of Thickness

2.2 Performance Test for Hose

2.2.1 Pressure Resistance Characteristic Test

- (1) Pressure Resistance Test
- (2) Failure Test
- (3) Airtight Test
- (4) Negative Pressure Test

2.2.2 Low Temperature Test

2.2.3 Electric Test

- (1) Conduct Test
- (2) Insulation Test

2.2.4 Flaking Test

2.2.5 Ozone Aging Test

2.2.6 Heat Aging Test

2.3 Physical Test of Rubber Layers

2.3.1 Tension Test

2.3.2 Hardness Test

2.3.3 Aging Test

- (1) Air Heating Aging Test
- (2) Dense Heating Aging Test

2.2.4 Deposit Test

- (1) Oil Resistance Test
- (2) Chemicals Resistance Test

3. General Conditions of Test

(1) Standard Condition for Laboratory

As the rule it shall be 20 °C, and record the testing temperature.

(2) Standard Condition for Specimen

As the rule, as it shall be the one that has passed for more than 24 hours after vulcanization, it shall have been left for more than 1 hour at the standard room temperature before the test.

(3) Converting Method of Test Records

As it shall be as KES A-A003 (Finishing Method for Numbers), follow table 1.

However, the converting method of test records other than table 1 shall follow the item 2.3 of JIS K 6301.

Table 1

	Measured Value	Obtained Test Record
Inside diameter (mm)	1 after decimal point	1 after decimal point
Outside diameter (mm)	"	"
Thickness (mm)	"	"
Length change rate (%)	"	"
Outside diameter change rate (%)	"	"
Failure pressure kgf/cm ² {Mpa}	Integer	Integer
Electric resistance (MΩ)	1 after decimal point	1 after decimal point
Flaking method A kgf/cm{N/m}	"	"
Flaking method B (mm)	Integer	Integer

4. Measurement and Testing Method

4.1 Measurement for dimensions of hose

4.1.1 Measurement for the Inside Diameter

It shall be as following method.

Here, it is the rule to measure as method A. Use method B or C if it is hard to do with the method A. Record the used method for measured value.

(1) Method A

Measure it by inserting plug gage or taper gage in hose. It shall be inserted without having a gap between the gage and inside diameter circumference.

(2) Method B

Measure the end of hose for two places perpendicular each other with an inside calipers, and have the average.

(3) Method C

Measure the inside diameter circumference of hose with a tape measure regulated by JIS B 512 (Steel tape measure), and divide it by ratio of circumference of circle to its diameter (π).

4.1.2 Measurement for Outside Diameter

It shall be as following method.

Here, it is the rule to measure as method A. Use method B or C if it is hard to do with the method A. Record the used method for measured value.

(1) Method A

Measure the end of hose for two places, perpendicular each other with a calipers or outside calipers, and have the average.

(2) Method B

Measure the outside diameter of hose and divide it by ratio of circumference of circle

to its diameter (π).

4.1.3 Measurement for Thickness

Measure it with a vernier calipers.

4.2 Performance Test of Hose

4.2.1 Pressure Resistance Characteristic Test

There are pressure resistance test, failure test, airtight test and negative pressure test for it. The length of specimen shall be, as the rule, about 1 m. Here, for assembled hose, use it as it is.

(1) Pressure Resistance Test

Make the end of the specimen free. Fill in the specimen with water or oil. After it reaches the standard pressure by pressing, as the rule, maintain it for 5 minutes, and observe whether there is any problems such as leakage, partial swelling, etc.

For length change and outside diameter change, as the specimen is filled with enough water or oil, check the indications with 500 mm gap on the center of the specimen as figure 1 before pressing. Outside diameter measurement shall be done on a certain point in between these indications.

For the measurement during pressing, observe whether there is any problem such as leakage after 5 minutes in standard pressure, and measure the distance between the indications and outside diameter.

For the measurement after pressing, decrease the inside pressure after the measurement during the test. After 10 minutes after the inside pressure completely goes down, measure the distance between the indications and outside diameter.

The length change and outside diameter change rate shall be calculated with following expression.

(A) Length Change Rate