

# JIS

## JAPANESE INDUSTRIAL STANDARD

### Test procedure of porosity for brake linings and pads of automobiles

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## Test procedure of porosity for brake linings and pads of automobiles

**1 Scope** This Japanese Industrial Standard specifies the test procedure of the porosity for drum brake linings and disk brake pads used for service brakes of automobiles (hereafter referred to as “brake linings” and “pads”, respectively).

Remarks : The following standards are cited in this Standard:

- JIS B 7410 *Liquid-in-glass thermometers for testing of petroleum products*
- JIS K 2249 *Crude petroleum and petroleum products — Determination of density and petroleum measurement tables based on a reference temperature (15 °C)*
- JIS K 2251 *Crude petroleum and petroleum products — Sampling*
- JIS K 2265 *Testing methods for flash point of crude oil and petroleum products*
- JIS K 2269 *Testing methods for pour point and cloud point of crude oil and petroleum products*
- JIS K 2283 *Crude petroleum and petroleum products — Determination of kinematic viscosity and calculation of viscosity index from kinematic viscosity*
- JIS K 2510 *Testing method for rust-preventing characteristics of lubricating oil*
- JIS K 2513 *Petroleum products — Corrosiveness to copper — Copper strip test*
- JIS K 2514 *Lubricating oils — Determination of oxidation stability*
- JIS K 2518 *Petroleum products — Lubricating oils — Determination of foaming characteristics*
- JIS K 6301 *Physical testing methods for vulcanized rubber*
- JIS K 7112 *Methods for determining the density and specific gravity of plastics*
- JIS Z 8401 *Rules for rounding off of numerical values*

**2 Definition** For the purpose of this Standard the following definition shall apply:

**porosity** The percentage of the volume of the absorbed oil relative to the volume of the test piece.

**3 Test temperature and humidity** Measurement shall be performed in a room at a temperature of  $23 \pm 2$  °C and a relative humidity of  $(50 \pm 5)$  % as a rule.

## 4 Apparatus and devices

**4.1 Balance** The balance shall have a reciprocal sensibility of 1 mg or higher.

**4.2 Container** The container shall be the one with suitable capacity capable of accommodating and heating the test piece.

**4.3 Thermostatic apparatus** The thermostatic apparatus shall be capable of adjusting the temperature at  $90 \pm 10$  °C.

**4.4 Desiccator** The desiccator shall contain dry calcium chloride or silica gel.

**5 Test piece** The test pieces shall be as follows:

- (1) Test pieces 25 mm in width, 25 mm in length, and with a thickness as large as possible shall be cut out from the normal and new brake lining or pad, each end face (face of 25 mm square) shall be finished smoothly, and the abrasive powders shall be removed completely.
- (2) The number of test pieces shall be as agreed upon between the parties concerned with delivery.
- (3) The test pieces shall preliminarily be left standing in a desiccator for 24 h or longer, or be heated for 1 h in an electric furnace kept at 150 °C and then cooled to ordinary temperature in a desiccator.

## 6 Test procedure

**6.1 Test oil** The test oil shall be as follows:

- (1) An oil conforming to those shown in Annex 1 or an oil at least equivalent thereto shall be used.
- (2) A fresh oil shall be used for each test.

**6.2 Procedure** The test procedure shall be carried out in the following order:

- (1) Measure the density of the test oil in accordance with JIS K 7112.
- (2) Obtain the volume of the test piece by measuring the width, length, and thickness to the nearest 0.02 mm.
- (3) Measure the mass of the test piece to the nearest 1 mg.
- (4) Place the test piece in the test oil in the container and keep it at  $90 \pm 10$  °C for 8 h.

Remove air bubbles, if attached on the test piece, by a suitable method.

- (5) Then, with the test piece kept immersed in the test oil, leave it standing for 12 h or longer until the test oil cools to room temperature.
- (6) Withdraw the test piece from the test oil, and remove oil from the test piece surface by rolling the test piece on a piece of cloth 4 to 5 times.