

KES

**Adhesive Strength Test for
Frictional Material of Break**

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1. Scope of Application

This standard shall regulate an adhesive strength test between a break shoe and the frictional material in a break shoe assembly, or a strut of a disk pad in a disk pad assembly and the frictional material, or two-layer material and the frictional material, manufactured by this company.

2. Explanation of Terminologies

Essential terminologies used in this standard are following.

- (1) Direction of pressurization: A direction of a force when shearing a stuck surface
- (2) Between the frictional material and the shoe as well as the strut and the two-layer material
- (3) Pressurization gap : A gap between a movable pressurization ram and a faying surface.
- (4) Maintenance gap : A gap between a maintenance part and the faying surface.
- (5) Direction of friction : A direction of a sliding motion when the frictional material is used in a car.
- (6) Two-layer material : A middle layer inserted between a semi-metallic frictional material and the strut for a purpose of insulation, etc.

3. Items of Test

- (1) Room temperature test
- (2) High temperature test
- (3) Rust generation test

Remark : Rust generation test for the frictional materials except the semi-metallic frictional materials is optional.

4. Test Equipments and Conditions

Read Table 1 for the test equipments and conditions

Table 1 : Test Equipments and Conditions

Test Equipments		Test Conditions
(1) Compressive, tensile tester		Pressurization speed 10 mm/min
(2) Heating brazier (Hot-Air-Circulation type)		A heating temperature is close to a temperature of near places of a sample
(3) Neutral salt spray tester		KD D 9502 (Method of neutral salt spray test)
(4) Jig	(a) Maintenance part of shoe, strut and two-layer material	Maintenance gap 0 ± 0.2 mm
	(b) Movable pressurization ram	Pressurization gap 1.0 ± 0.2 mm (Push the whole pressurization surface of sample)

5. Sample

- (1) The break shoe assembly or the pad must be a new article as regulated.
- (2) Sizes of the sample must be as mentioned as following.
 - (a) As a rule, the adhesive break shoe assembly must be in a size of manufactured goods.

The sample may be substituted by a sample, which body is divided by lines, as shown in figure 1.

Length of the direction of friction on the sample is divided into about 25 mm, and the length of the direction is a width of the manufactured goods.

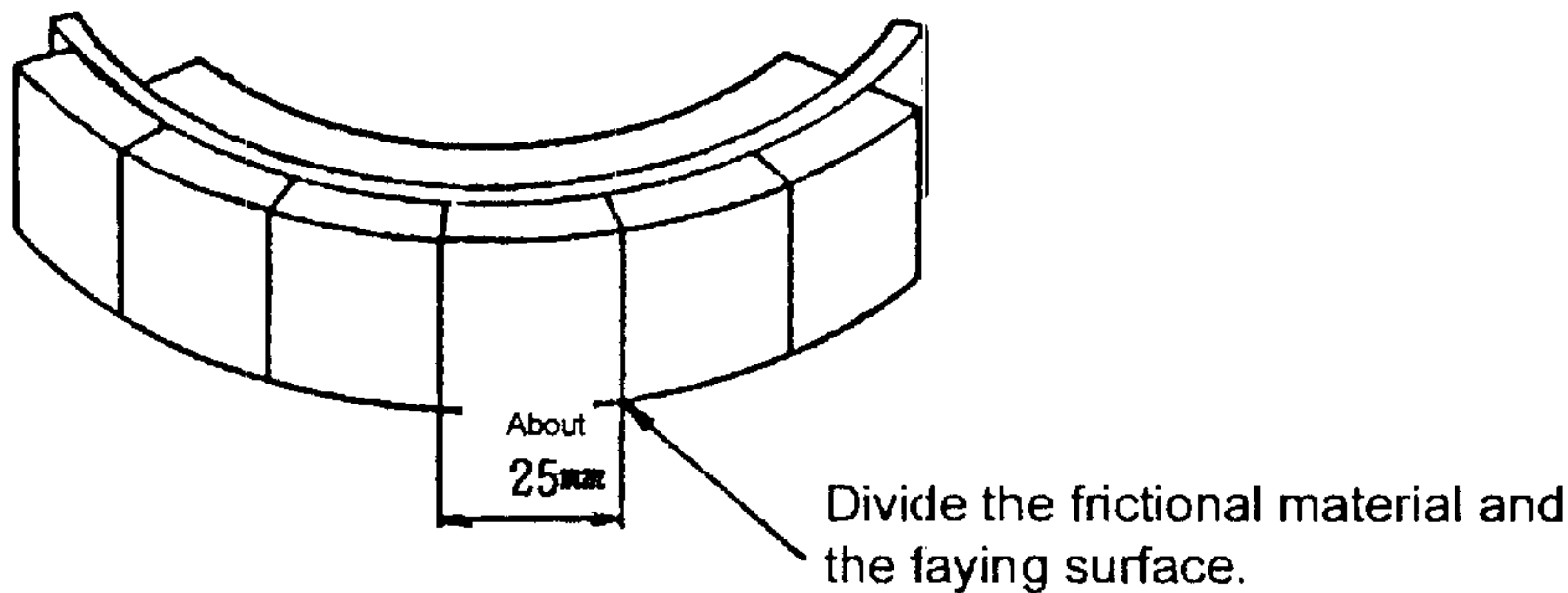


Figure 1

- (b) As a rule, the pad must be in the size of the manufactured goods.
- (c) Rivet stopper break shoe assembly must be samples shown in Figure 2 and Figure 3.

Length of the direction of friction of the testing plate must be an interval of the rivet l, as a rule.

The length of the pressurization gap is the width of the manufactured goods.

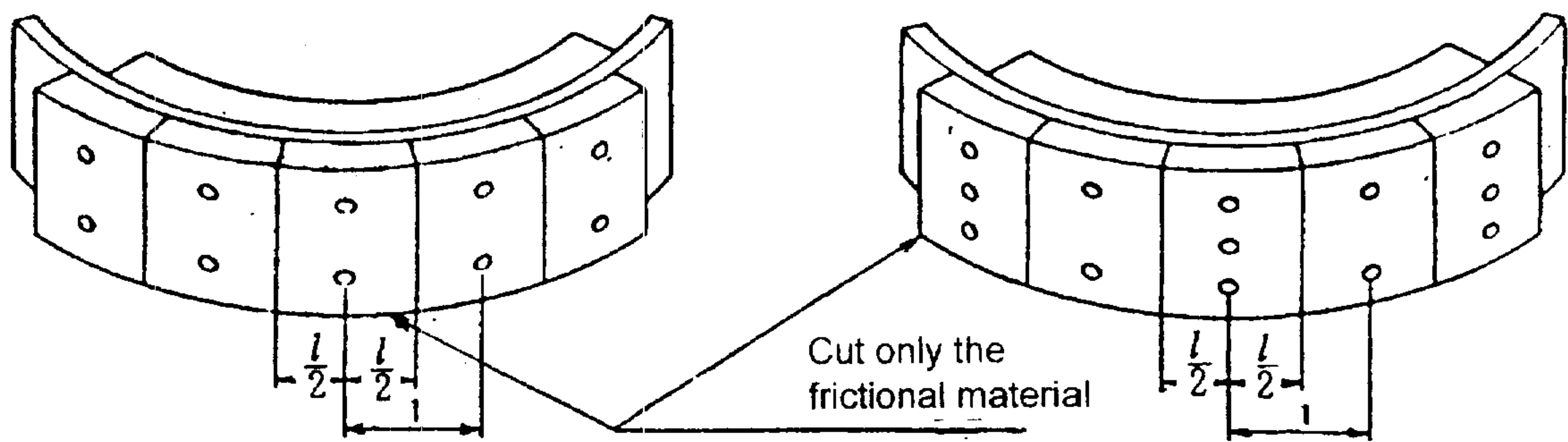


Figure 2

Figure 3

Remark : l in Figures 2 and 3 represents the length between the rivets.

6. Test Methods

- (1) Room temperature test: Perform a shearing test on the sample kept at the room temperature. If the sample is the testing plate, perform the test on all the circumference of the shoe.
- (2) High temperature test: Take out a heated sample from the heating brazier, and perform the shearing test within one minute. If the sample is the testing plate, test one testing plate for one shoe, and test the middle and the ends with three shoes.

Table 2 : Heating Temperature

Faying break shoe assembly	(100°C), 200°C, 300°C
Disk pad assembly	(100°C), 200°C, 300°C, 350°C, (400°C)
Rivet stopper break shoe assembly	(100°C), 200°C, 300°C

Put in a heating period and fixed temperature for one hour.

Remark 1. If it is impossible to perform the shearing test within one minute of taking the sample out of the high temperature, perform the test after recording a surface temperature of the sample.

2. Heating temperature in () is an optional item.

7. Record and Form

The gist of a record is as following.

7.1 Faying break shoe assembly and disk pad assembly

(1) Record a breaking load for the shearing test, and calculate the adhesive strength by a following equation.

$$\text{Adhesive strength } f = \frac{F}{A} \text{ (kg f / cm}^2 \text{) } \{ \text{ Mpa } \}$$

Here, F: Breaking load kgf {N}

A : Area of the sample cm²

(2) Divide a condition of broken surface into 7 parts for the break shoe assembly and 9 parts for the disk pad assembly, and record a percentage of each area.

(a) Division of the break shoe assembly

- ① A space between the shoe and a primer
- ② Primer layer
- ③ A space between the primer and adhesives
- ④ Adhesives layer
- ⑤ A space between the adhesives and the frictional material
- ⑥ Frictional material layer less than 0.5 mm
- ⑦ Frictional material layer larger than 0.5 mm