

JIS

JAPANESE INDUSTRIAL STANDARD

**Brake linings and pads for
automobiles**

Ⓔ **JIS D 4411—1993**

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.





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Brake linings and pads for automobiles

D 4411-1993

1. **Scope** This Japanese Industrial Standard specifies the brake linings of drum brake and the pads of disc brake for automobiles (hereafter referred to as "linings").

Remarks 1. The coefficient of friction, its tolerance and the wear rate specified in this Standard is derived from the test using the constant speed type friction test machine used as the testing method using test piece.

2. The following standards are cited in this Standard:

JIS G 5501 Grey iron castings

JIS R 6252 Abrasive papers

2. **Classification** Linings shall be classified according to the use into four classes shown in Table 1.

Table 1. Classification

Classification	Use
Class 1	Used only for parking brake (those used for center brake, drum brake of drum in disc brake, etc.)
Class 2	Drum brake used for light load (those used for rear brake of front engine and front wheel drive vehicle, etc.)
Class 3	Drum brake used for heavy load
Class 4	Used for disc brake

3. **Friction characteristics** Coefficient of friction, its tolerances and wear rates of linings shall conform to the values given in Table 2 to Table 5 when tested in accordance with Clause 5.

After the tests, the frictional surface of disc and the test piece shall be free from harmful crack, swelling, etc.

Table 2. Friction characteristics of Class 1

Item	Test temperature ⁽¹⁾		
	100°C	150°C	200°C
Coefficient of friction ⁽²⁾	0.30 to 0.70	0.25 to 0.70	0.20 to 0.70
Tolerance on designated coefficient of friction ⁽³⁾	± 0.10	± 0.12	± 0.12
Wear rate (10 ⁻⁷ cm ³ /N·m)	1.0 or less	2.0 or less	3.0 or less

Notes ⁽¹⁾ Test temperature shall be the temperature of frictional surface of disc of testing device.

⁽²⁾ Range of coefficient of friction shall include the tolerance.

⁽³⁾ The coefficient shall be in accordance with the agreement between the parties concerned.

Table 3. Friction characteristics of Class 2

Item	Test temperature ⁽¹⁾			
	100°C	150°C	200°C	250°C
Coefficient of friction ⁽²⁾	0.25 to 0.65	0.25 to 0.70	0.20 to 0.70	0.15 to 0.70
Tolerance on designated coefficient of friction ⁽³⁾	± 0.08	± 0.10	± 0.12	± 0.12
Wear rate (10 ⁻⁷ cm ³ /N·m)	0.5 or less	0.7 or less	1.0 or less	2.0 or less

Table 4. Friction characteristics of Class 3

Item	Test temperature ⁽¹⁾				
	100°C	150°C	200°C	250°C	300°C
Coefficient of friction ⁽²⁾	0.25 to 0.65	0.25 to 0.70	0.25 to 0.70	0.20 to 0.70	0.15 to 0.70
Tolerance on designated coefficient of friction ⁽³⁾	± 0.08	± 0.10	± 0.12	± 0.12	± 0.14
Wear rate (10 ⁻⁷ cm ³ /N·m)	0.5 or less	0.7 or less	1.0 or less	1.5 or less	3.0 or less