

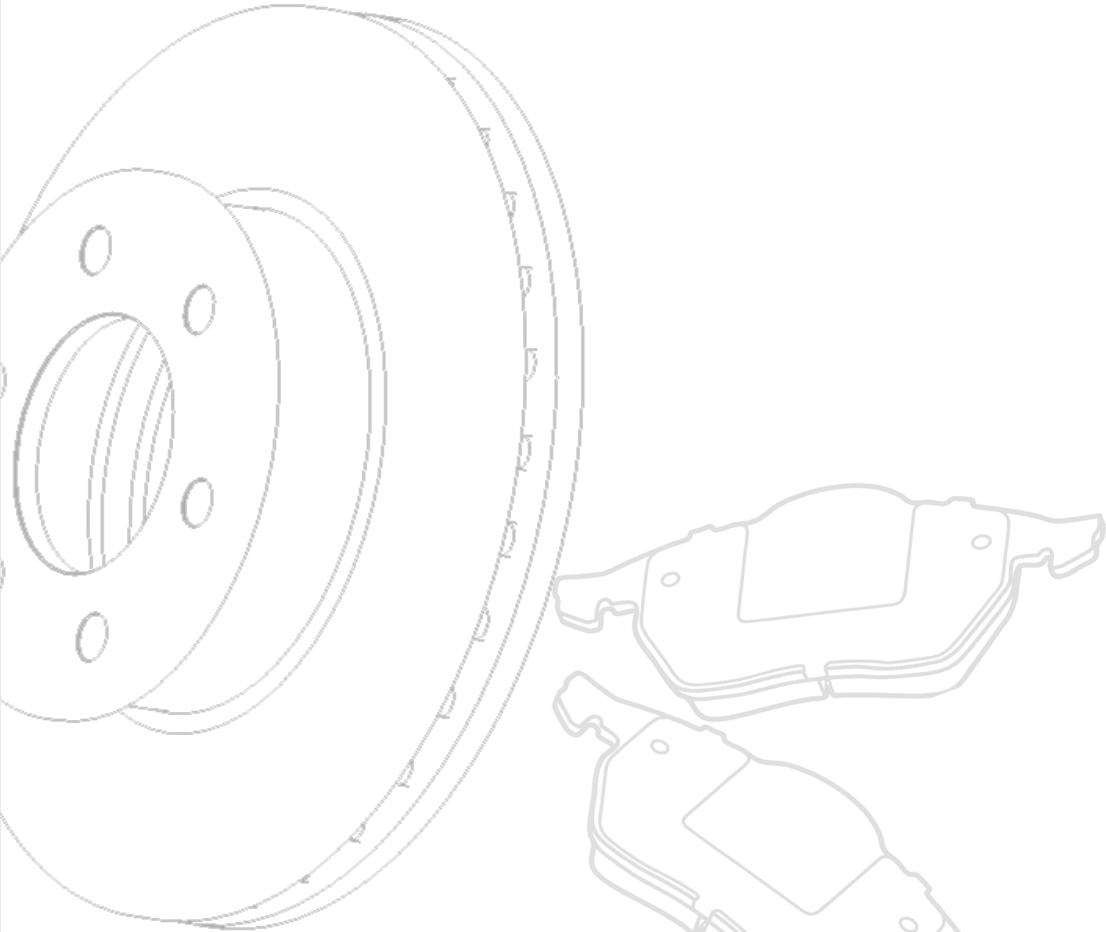
JNIBK CORPORATION



One STOP for  *all BRAKES...*

Benchmark Test Report

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01 Test Platform and Standard

02 Benchmark Test

03 Conclusions



Test Platform and Standard



1.1 Test Platform



New Hiace H2

Required Inertia: $135.0 \text{ kg}\cdot\text{m}^2$

Piston Diameter: 66.6 mm

Effective Radius: 115.5 mm

Drum/Rotor Type: Rotor

Fixture ID: PN1516

1.2 Test Equipment-Link 3000



Procedure

- > SAE J2522
- > JASO C427

Parameter	Operation Range
Package	ProLink Microsoft Windows based
Sample Range	2000/s/channel
Motor Power	185Kw
Maximum Speed	2000rpm
Pressure	206 bar
Minimum Inertia	4.9kg ·m ²
Torque	5640Nm

1.3 Test Standard -SAE J2522

	Cycle	# Of Application	Initial Speed	Final Speed	Pressure (bar)	Initial Temp.
6.1	Green μ	30	80km/h	30km/h	30	100 °C
6.2	Burnish	192	80km/h	30km/h	Different brake pressure	100 °C
6.3	Char. Value 1	6	80km/h	30km/h	30	100 °C
6.4.1	Speed/40km/h	8	40km/h	5km/h	10~80	100 °C
6.4.2	Speed/80km/h	8	80km/h	40km/h	10~80	100 °C
6.4.3	Speed/120km/h	8	120km/h	80km/h	10~80	100 °C
6.4.4	Speed/160km/h	8	160km/h	130km/h	10~80	100 °C
6.4.5	Speed/200km/h	8	200km/h	170km/h	10~80	100 °C
6.5	Char. Value 2	6	80km/h	30km/h	30	100 °C
6.6	Cold Application	1	40km/h	5km/h	30	40 °C
6.7	Motorway Applications	2	100km/h and 90% of V_{max}	5km/h and 50% of V_{max}	0.6g	50 °C
6.8	Char. Value 3	6	80km/h	30km/h	30	100 °C
6.9	Fade 1	15	100km/h	5km/h	0.4g	Different brake temperature
6.10	Recovery 1	18	80km/h	30km/h	30	100 °C
6.11	High Temp.	8	80km/h	30km/h	10~80	100 °C
6.12.1	Increasing T 500 /300	9	80km/h	30km/h	30	Different brake temperature
6.12.2	Pressure Line 500 /300	8	80km/h	30km/h	30	500 °C
6.13	Recovery 2	18	80km/h	30km/h	30	100 °C
6.14	Fade 2	15	100km/h	5km/h	0.4g	Different brake temperature
6.15	Recovery 3	18	80km/h	30km/h	30	100 °C

1.3 Test Standard-JASO C427

		Initial speed km/h	Final speed km/h	Initial brake temperature °C	Braking deceleration G	Number of applications
General wear tests	Burnish	50	0	100	0.3	200
		50	0	100	0.3	1000
	Wear test	50	0	200	0.3	1000
		50	0	250	0.3	1000
		50	0	300	0.3	500
		50	0	350	0.3	500
		50	0	400	0.3	200
		50	0	100 - II	0.3	500
	Second wear test	50	0	200 - II	0.3	500
		Burnish	50	0	100	0.3
High speed wear test (Optional)	High speed wear test	100	0	100	0.3	100



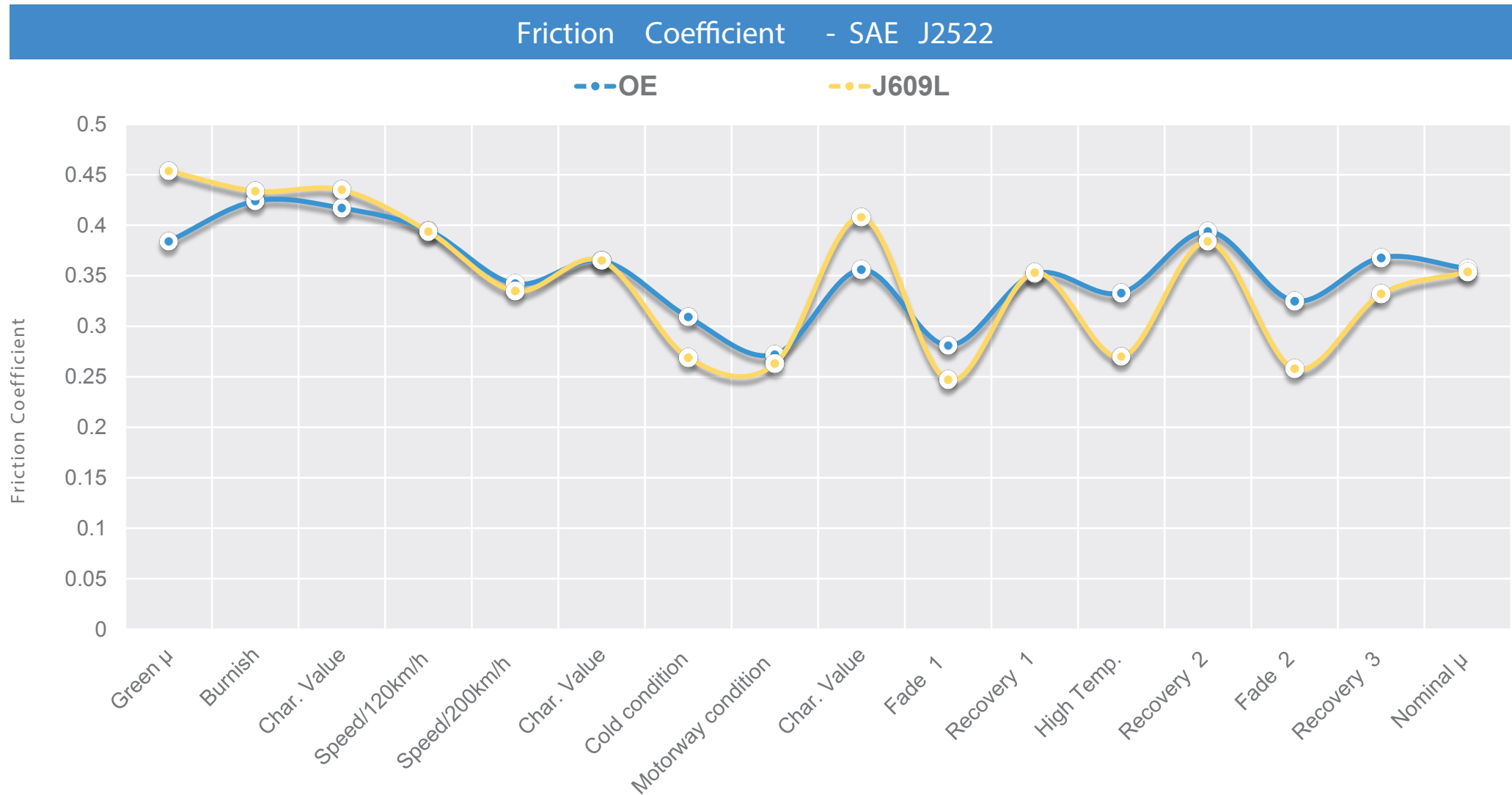
Benchmark Test



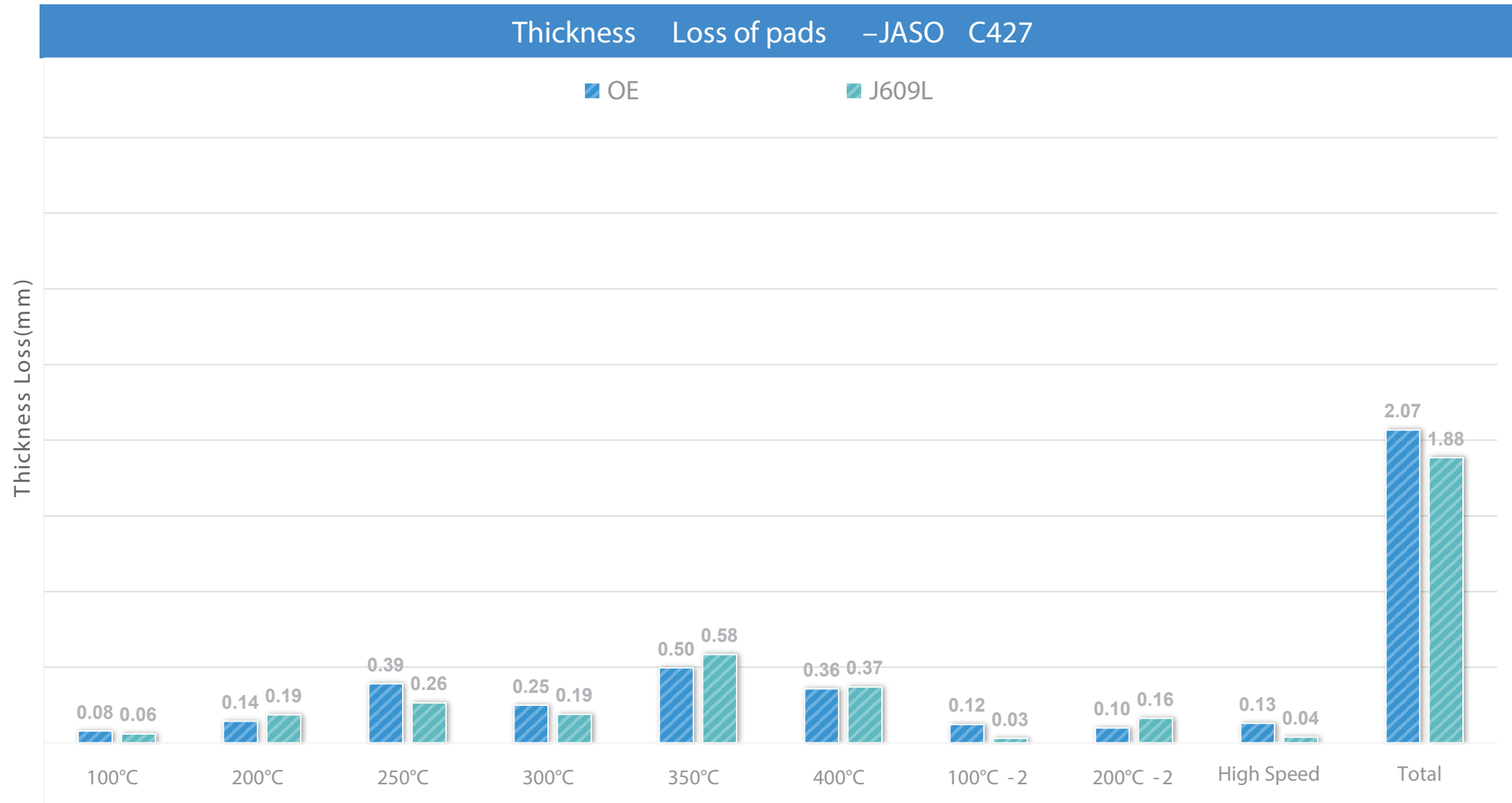
02 Benchmark Test

Friction Coefficient - SAE J2522				
Formula			OE	J609L
Green μ	(6.1)	μ Green	0.384	0.454
Burnish	(6.2)	μ Bedding	0.424	0.434
Char. Value	(6.3)	μ 0 p6	0.417	0.435
Speed/120km/h	(6.4.3)	μ v120	0.395	0.394
Speed/200km/h	(6.4.5)	μ max	0.342	0.335
Char. Value	(6.5)	μ 0 P6	0.365	0.365
Cold condition	(6.6)	μ T40	0.309	0.269
Motorway condition	(6.7)	μ Mw2	0.272	0.263
Char. Value	(6.8)	μ 0 P18	0.356	0.408
Fade 1	(6.9)	μ F1	0.281	0.247
Recovery 1	(6.10)	μ 0 P18	0.352	0.353
High Temp.	(6.12)	T500/ μ T300	0.333	0.270
Recovery 2	(6.13)	μ 0 P18	0.394	0.384
Fade 2	(6.14)	μ F2	0.325	0.258
Recovery 3	(6.15)	μ 0 P18	0.368	0.332
Nominal μ		μ avg	0.357	0.354

02 Benchmark Test



02 Benchmark Test





Conclusions



Compare of performance

SAE J2522 Friction Coefficient

From the dyno tests based on New Hiace H2 vehicle platforms, it can be seen that OE demonstrates little performance advantage compared to J609L . In fact, the brake performance of OE and J609L are close under various brake conditions.

JASO C427 Wear -resistance Performance

From the dyno tests based on New Hiace H2 vehicle platforms, The thickness loss of J609L is less than OE. This result shows that facing complex braking conditions, J609L has lifetime advantage compared to OE.

THANK YOU



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