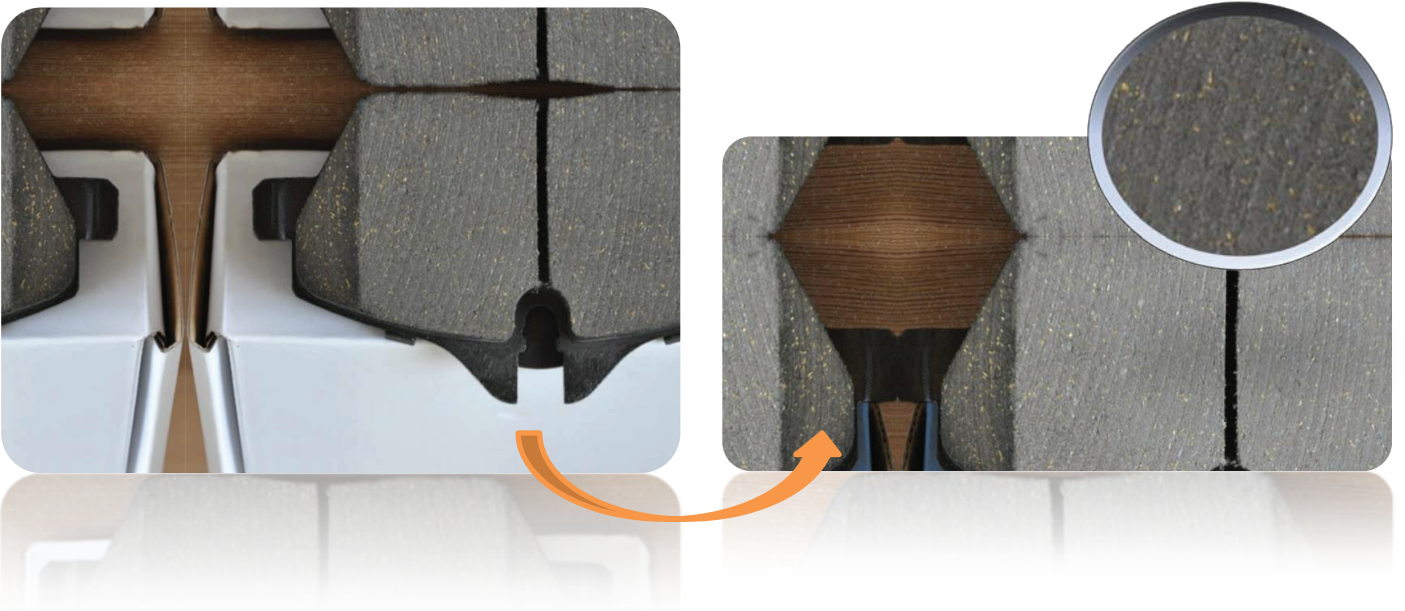


Ceramic Series

J601CR



J601CR offers

- 1 Good green characteristic/Shorter bedding-in time;
- 2 A long using life;
- 3 Good braking performance under high temperature and speed;
- 4 A environment-friendly formula(No asbestos);
- 5 Comfortable pedal feeling and lower braking noise;
- 6 Less damage on rotor and less dust after braking;

1 Performances Test Summary

Performance	Applied Standard	Test Equipment	Test Equipment
Density	SAE J380	MP3002 Density Balance	
Hardness	GB5766-2007	Rockwell Hardness Tester	
pH Value	JASO C458-86	PHS-25 Model pH Value Tester	
Shear Strength	ISO6312-2010	MYJ-100J Model Shear Tester	
Porosity	QC/T 583	DF- II Model Magnetic Heating Stirrer	
Impact Strength	GB5763-2008	XJJ Model Impact Strength Test Machine	
Compressibility	ISO6310-2009	JURID(Honeywell) Compressibility Test Machine	
Constant Speed Test	GB5763-2008	XD-MSM Model Constant Speed Test Machine	
Chase Test	SAEJ661a	RP Model Chase Machine	
Dynamometer Brake Effectiveness	SAE J2522	Link1500 Model DYNO	
Dynamometer Noise Test	SAE J2521	Link3000 Model DYNO	
Wear Test	JASO-C427	Link1500 Model DYNO	



2 Physical Properties (1)

Density

	Temperature [°C]	Operation	Remarks
1	R.T.	Weight	In Air
2	R.T.	Weight	In Water

Hardness

	Scale	Rockwell	Penetrator Diameter,mm	Standards Loading [N]	Test Loading [N]
1	R	HRR	12.7	98.07	588.4

pH Value

	Scale	pH Value (Buffer Solution)	Soak Solution
1	0.00~14.00	4.00, 6.86, 9.18	KCl(aq.3mol/L)

Shear Strength

	Positive Pressure [MPa]	Shear Force [KN]	Loading Ratio [N/s]	Power [KW]
1	0-0.5	0-100	4500±500	1.5

Porosity

	Temperature [°C]	Time [hr]	Remarks
1	90±10	8	In Oil
2	90±10→R.T.	Over 12	In Oil

Impact Strength

	Impact Speed [m/s]	Impact Power [J]	Impact Angel [°]	Sample size [mm]
1	2.9	0.5	150	55*10*6



2 Physical Properties (2)

Density (g/cm ³)	2.25~2.35	Hardness/HRR	70~80
pH Value	8.40~8.60	Shear (N/mm ²)	>5.00
Porosity/%	4.70~5.00%	Impact (KJ/m ²)	0.900~1.150

Compressibility

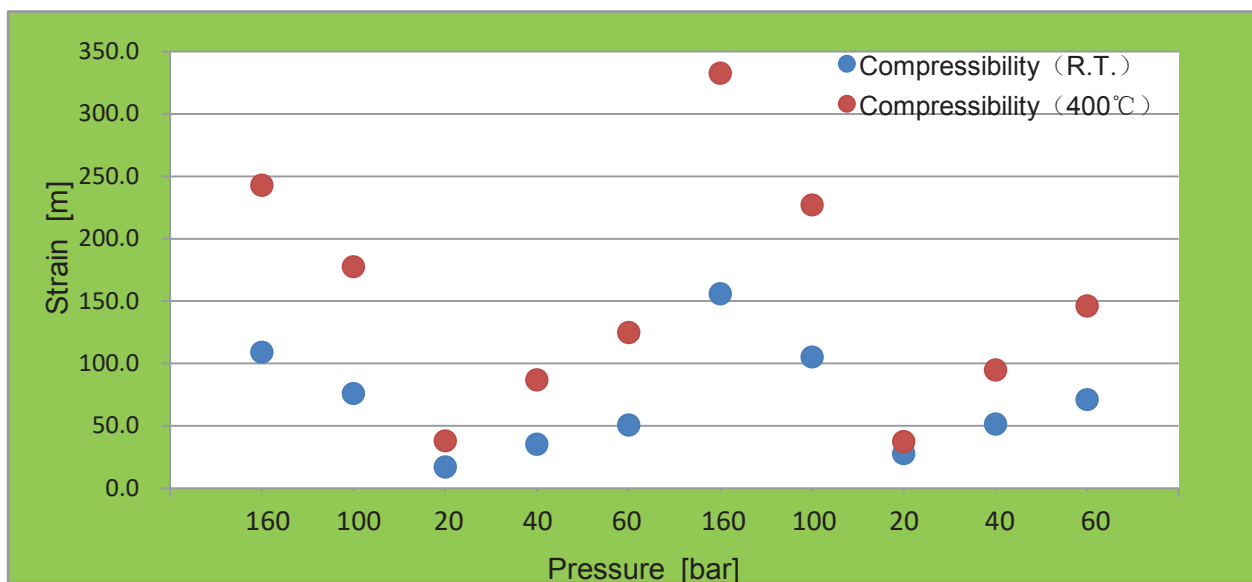
	Load Increment Ratio [Mpa/sec]	Initial Loading [Mpa]	Test Loading [Mpa]	Cycle
1	8±1	0.5	2~16	3

Compressibility (R.T.)

Load/bar	160	100	20	40	60	160	100	20	40	60
Cycle	3 ↓	3 ↑	3 ↑	3 ↑	3 ↑	1 ↓	1 ↑	1 ↑	1 ↑	1 ↑
Mean Value	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]
	109.1	76.0	17.1	35.4	50.8	155.9	105.2	27.8	51.5	71.1

Compressibility (400°C)

Load/bar	160	100	20	40	60	160	100	20	40	60
Cycle	2 ↓	2 ↑	2 ↑	2 ↑	2 ↑	1 ↓	1 ↑	1 ↑	1 ↑	1 ↑
Mean Value	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]	[μm]
	242.9	177.7	38.1	87	125	332.8	227.2	37.4	94.9	146.3



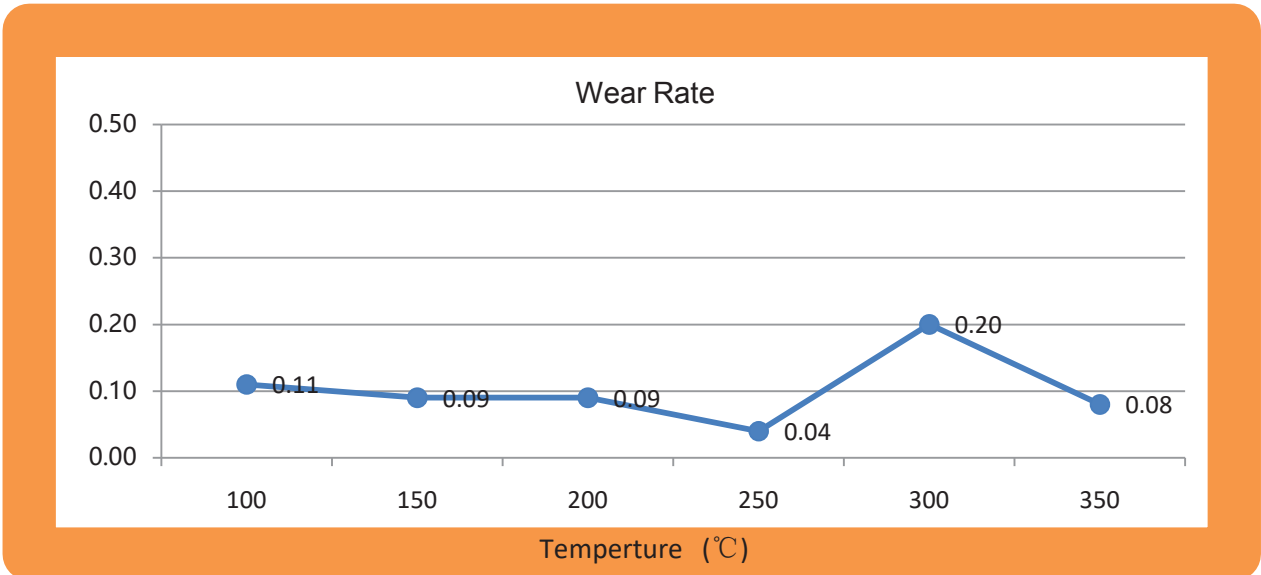
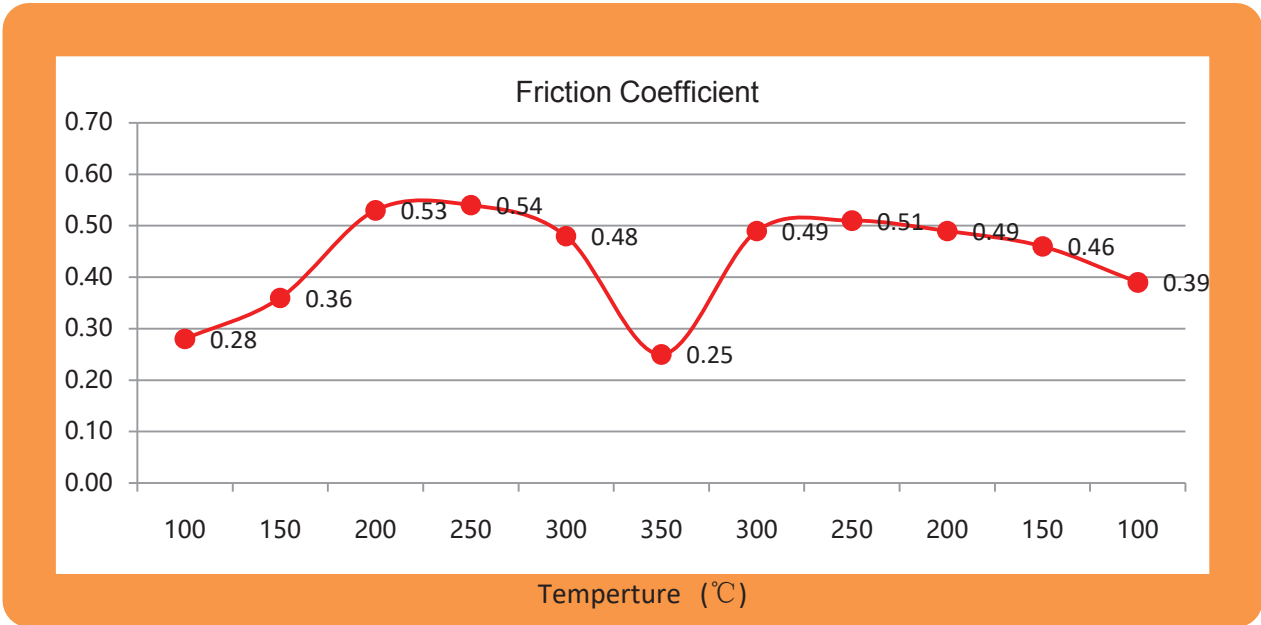


3 Friction and wear (1) (constant speed)

Equipment Name: Constant speed tester

Standard Applied:GB5763-2008

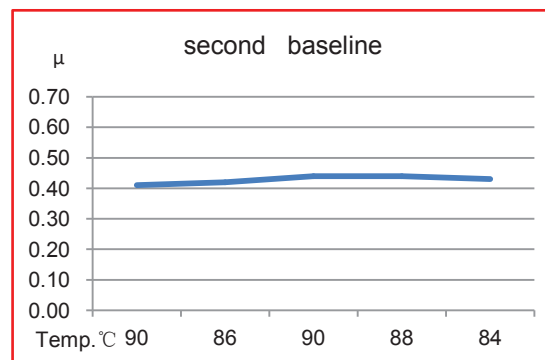
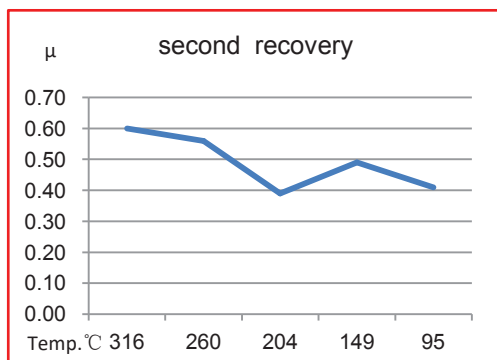
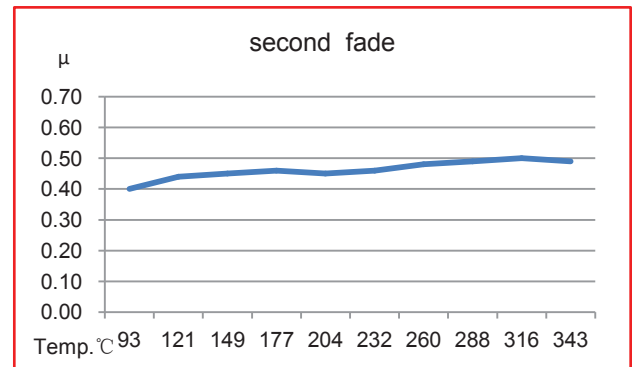
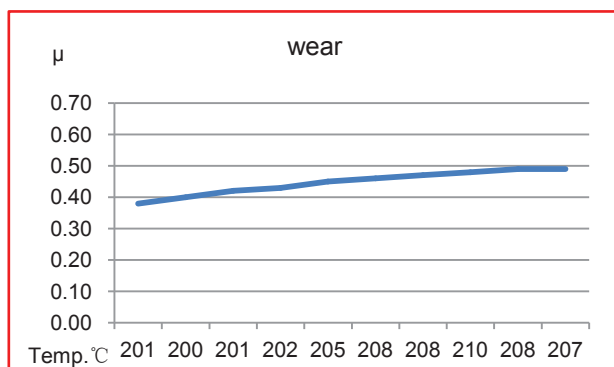
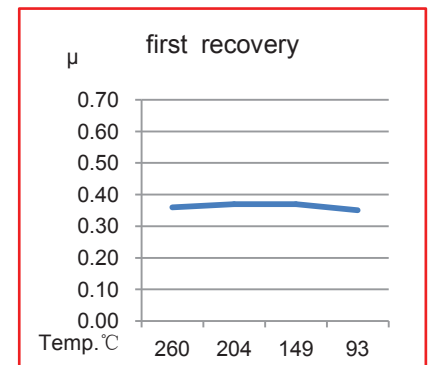
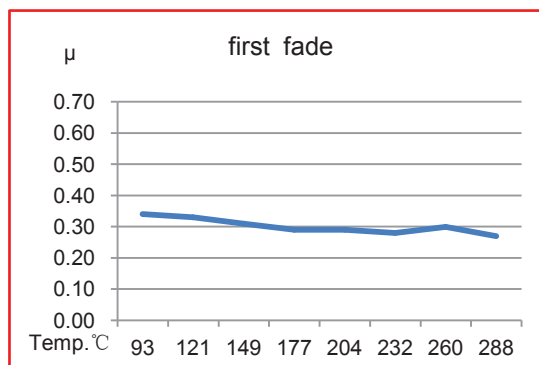
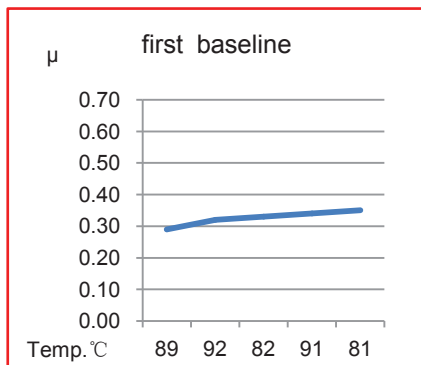
Test Temperature (°C)	Friction Coefficient	Coefficient appointed	Wear Rate $10^{-7} \text{cm}^3/(\text{N}\cdot\text{m})$	Test Temperature (°C)	Friction Coefficient		Wear Rate $10^{-7} \text{cm}^3/(\text{N}\cdot\text{m})$
					Warming	Cooling	
100	0.25-0.65	0.35 ± 0.08	0-0.50	100	0.28	0.39	0.11
150	0.25-0.70	0.35 ± 0.10	0-0.70	150	0.36	0.46	0.09
200	0.25-0.70	0.35 ± 0.10	0-1.00	200	0.53	0.49	0.09
250	0.25-0.70	0.35 ± 0.10	0-1.50	250	0.54	0.51	0.04
300	0.25-0.70	0.35 ± 0.12	0-2.00	300	0.48	0.49	0.20
350	0.25-0.70	0.35 ± 0.12	0-2.50	350	0.25		0.08



4 Friction and wear (2) (chase)

Equipment Name Chase Tester
Standard Applied:SAE J661A

	Before Test	After Test	Loss	Loss%
Weight (g)	8.88	8.60	0.28	3.15%
Thickniss (mm)	6.58	6.42	0.16	2.43%
μ	normal	0.44	hot	0.46





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5 Friction and wear (3) (DYNO)

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
6.1	30	80km/h	30km/h	30	100°C
6.2	192	80km/h	30km/h	15,30,15,18,22,38 15,26,18,34,15,26 15,22,30,46,26,51 22,18,42,15,18,46 26,15,34,22,18,30 18,38 cycles 6	100°C
6.3	6	80km/h	30km/h	30	100°C
6.4.1	8	40km/h	5km/h	10~80	100°C
6.4.2	8	80km/h	40km/h	10~80	100°C
6.4.3	8	120km/h	80km/h	10~80	100°C
6.4.4	8	160km/h	130km/h	10~80	100°C
6.4.5	8	200km/h	170km/h	10~80	100°C
6.5	6	80km/h	30km/h	30	100°C
6.6	1	40km/h	5km/h	30	40°C
6.7	2	100km/h 90% of V_{max}	5km/h 50% of V_{max}	0.6g	50°C
6.8	6	80km/h	30km/h	30	100°C
6.9	15	100km/h	5km/h	0.4g	100°C,215°C,283°C,330°C, 367°C,398°C,423°C,446°C, 465°C,483°C,498°C,513°C, 526°C,539°C,550°C
6.10	18	80km/h	30km/h	30	100°C
6.11	8	80km/h	30km/h	10~80	100°C
6.12.1	9	80km/h	30km/h	30	100°C,150°C,200°C,250°C, 300°C,350°C,400°C,450°C, 500°C
6.12.2	8	80km/h	30km/h	30	500°C
6.13	18	80km/h	30km/h	30	100°C
6.14	15	100km/h	5km/h	0.4g	100°C,215°C,283°C,330°C, 367°C,398°C,423°C,446°C, 465°C, 483°C,498°C,513°C, 526°C,539°C,550°C
6.15	18	80km/h	30km/h	30	100°C

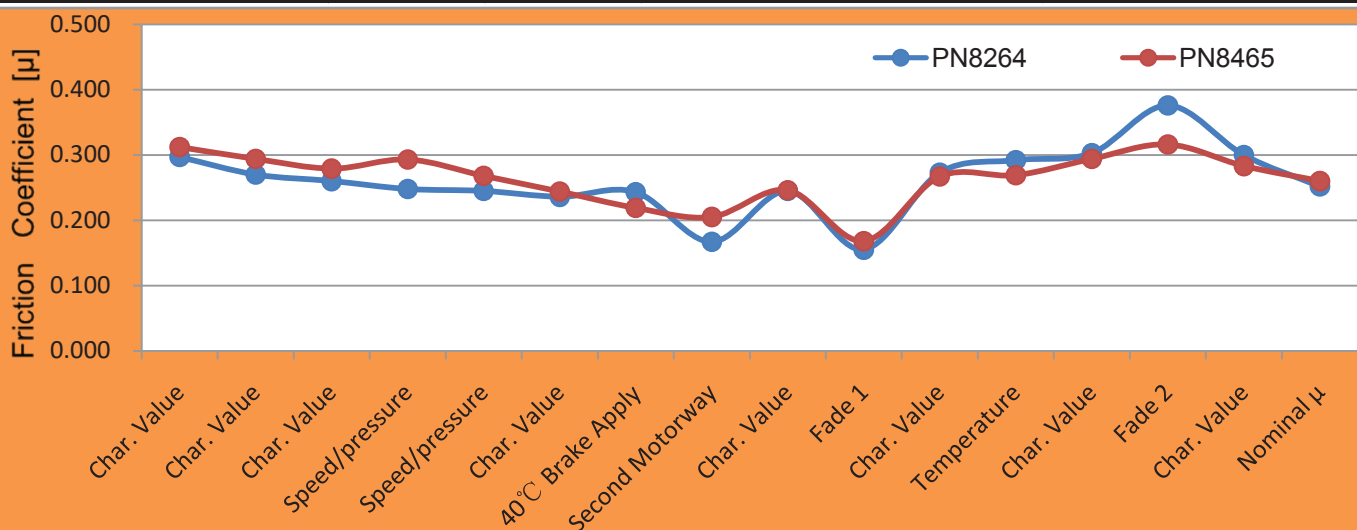
Vehicle Information

Sample Model	PN8264	Sample Model	PN8465
Engine Size	2.0	Engine Size	2.0
Required Load	597Kg	Required Load	529Kg
Required Inertia	56.7kg·m ²	Required Inertia	55.2kg·m ²
Piston Diameter	55.0mm	Piston Diameter	56.6mm
Effective Radius	107.0mm	Effective Radius	112.0mm

Dynamometer Brake Effectiveness



Characteristic Values μ			AVG	MIN	AVG	MIN
Char. Value	(6.1)	μ_{avg}	0.297		0.312	
Char. Value	(6.2)	μ_{avg}	0.270		0.294	
Char. Value	(6.3)	μ_{0p6}	0.260		0.279	
Speed/pressure	(6.4.3)	μ_{v120}	0.248		0.293	
Speed/pressure	(6.4.5)	μ_{vmax}	0.245		0.268	
Char. Value	(6.5)	μ_{0P6}	0.236		0.244	
40°C Brake Apply	(6.6)	μ_{T40}	0.243		0.219	
Second Motorway	(6.7)	μ_{Mw2}	0.167		0.205	
Char. Value	(6.8)	μ_{0P18}	0.245		0.246	
Fade 1	(6.9)	μ_{F1}		0.155		0.168
Char. Value	(6.10)	μ_{0P18}	0.273		0.267	
Temperature	(6.12)	T500/ μ_{T300}		0.292		0.269
Char. Value	(6.13)	μ_{0P18}	0.303		0.294	
Fade 2	(6.14)	μ_{F2}		0.376		0.316
Char. Value	(6.15)	μ_{0P18}	0.300		0.283	
Nominal μ		μ_{avg}		0.252		0.260





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6 Noise Performance (1)

Section 1-Break-in(Accrording to AK Noise Procedure) , Section 1 (30)

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
1.1	30	80km/h	30km/h	30	100°C

Section 2-Bedding (32)-(As defined in AK Master)-Section 2

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
2.1	32	80km/h	30km/h	15,30,15,18,22,38 15,26,18,34,15,26 15,22,30,46,26,51 22,18,42,15,18,46 26,15,34,22,18,30 18,38	100°C

Optional Section 3 -Friction Characteristic Value After Break-in (6)-(As defined in AK Master)-

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
3.1	6	80km/h	30km/h	30	100°C

Section 4-Drag Module (266)

Cycle	# Of Application	Intital Speed	Pressure (bar)	Intital Temp.
4.1	14	3 & 10km/h(Altemate)	0,30,5,25,10,20,15	50°C
4.2	same	same	same	75°C
4.3	same	same	same	100°C
4.4	same	same	same	125°C
4.5	same	same	same	150°C
4.6	same	same	same	175°C
4.7	same	same	same	200°C
4.8	same	same	same	225°C
4.9	same	same	same	250°C
4.10	same	same	same	300°C
4.11	same	same	same	250°C
4.12	same	same	same	225°C
4.13	same	same	same	200°C
4.14	same	same	same	175°C
4.15	same	same	same	150°C
4.16	same	same	same	125°C
4.17	same	same	same	100°C
4.18	same	same	same	75°C
4.19	same	same	same	50°C

Section 5- Intermediate Conditioning and Warm-up Module (24)

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
5.1	12	50km/h	0km/h	30,5,25,10,20,15	100°C
5.2	same	same	same	same	150°C

Run 2 stops for each pressure. Continue this for the remaining pressures.



6 Noise Performance (2)

Section 6-Backward/forward (50)

Cycle	# Of Application	Intital Speed	Pressure (bar)	Intital Temp.
6.1	10	3,-3 km/h(Altemate)	0,20,5,15,10	150°C
6.2	same	same	same	125°C
6.3	same	same	same	100°C
6.4	same	same	same	75°C
6.5	same	same	same	50°C

Section 7-Deceleration Module (108)

Cycle	# Of Application	Intital Speed	Final Speed	Pressure (bar)	Intital Temp.
7.1	12	50km/h	0km/h	30,5,25,10,20,15	50°C
7.2	same	same	same	same	100°C
7.3	same	same	same	same	150°C
7.4	same	same	same	same	200°C
7.5	same	same	same	same	250°C
7.6	same	same	same	same	200°C
7.7	same	same	same	same	150°C
7.8	same	same	same	same	100°C
7.9	same	same	same	same	50°C

Run 2 stops for each pressure.For example, 5 bar at 50°C for 2 stops. Then run 10 bar at 50°C for 2 stops. Continue this for the remaining pressures.Do this for all 9 cycles.

Section 8-Friction Characteristic Value After Break-in (6)

-Repeat Section 3 above

Section 9-Drag Module (226)

-Repeat Section 4 above

Section 10-Intermediate Conditioning and Warm-Up Module (24)

-Repeat Section 5 above

Section 11-Backward/Forward (50)

-Repeat Section 6 above

Section 12-Deceleration Module (108)

-Repeat Section 7 above

Section 13-Friction Characteristic Value After Break-in (6)

-Repeat Section 3 above

Section 14-Drag Module(266)

-Repeat Section 4 above

Section 15-Intermediate Condirioning and Warm-Up Module (242)

-Repeat Section 5 above

Section 16-Backward/Forward(50)

-Repeat Section 6 above

Section 17-Deceleration Module (108)

-Repeat Section 7 above

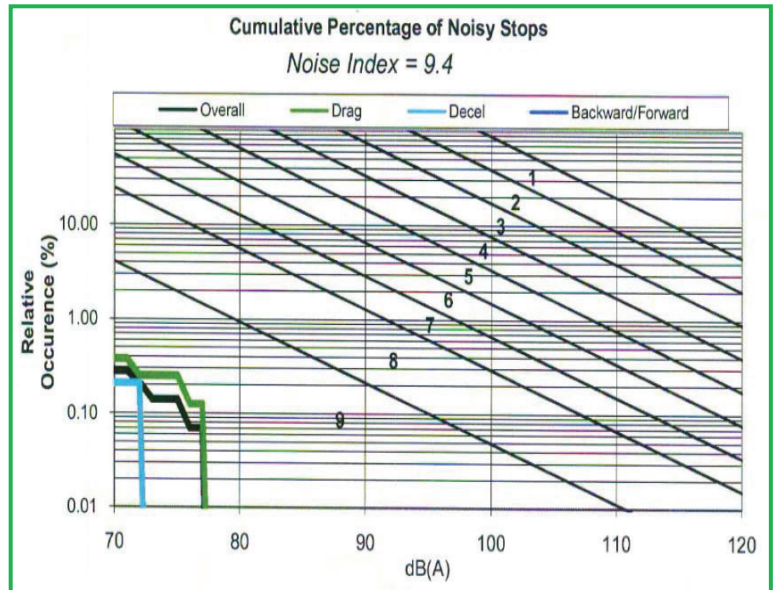
Section 18-Friction Characteristic Value After Break-in (6)

-Repeat Section 3 above



SAE J2521

Fixture identification:PN8264
 Required Wheel Load:597.0kg
 Actural Wheel Load:597.0kg
 Required Inertia:56.7kg·m²
 Actural Inertia:56.8kg·m²
 Pri/Lead/Inner Lining:J601CR
 Sec/Trail/Outer Lining:J601CR
 Comments:With nomal shim No knuckle



Frequency Range	Threshold	Number of Noisy Stops (per frequency range / apply type)				Percentage (%) Noisy Stops (per frequency range / apply type)			
		Overall	Drag	Decel	Back/Fwd	Overall	Drag	Decel	Back/Fwd
2 kHz to 17 kHz	>70 dB(A)	4	3	1	0	0.3%	0.4%	0.2%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
2 kHz to 4 kHz	>70 dB(A)	2	1	1	0	0.1%	0.1%	0.2%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
4 kHz to 6 kHz	>70 dB(A)	1	0	1	0	0.1%	0.0%	0.2%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
6 kHz to 10 kHz	>70 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
10 kHz to 14 kHz	>70 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
14 kHz to 17 kHz	>70 dB(A)	2	2	0	0	0.1%	0.3%	0.0%	0.0%
	>80 dB(A)	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Total # of Stops						1430	798	482	150

7 Wear Test

Applied Standard	Appended Table 1 List of Test Items				
	initial speed	Initial brake temperature °C	Braking deceleration G	Number of applications	remark
JASO C427	50	100	0.3	1000	Measure the thickness of pads for each specified temperature in parentheses are optional.
	50	200	0.3	1000	
	50	300	0.3	1000	
	50	400	0.3	1000	
	100	100	0.3	1000	





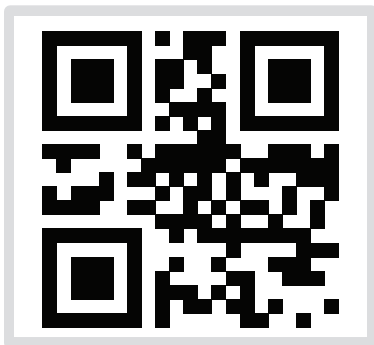
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8 Application Recommendation

Formulation	Ceramic
Product Rank	<input type="checkbox"/> Good/Economic <input checked="" type="checkbox"/> Better/Medium <input type="checkbox"/> Best/Premium
Friction Coefficient level	FF
Vehicle types recommended	Passenger cars(PC) with swept volume below 4.0(include mini PC,light PC,compact PC,medium PC and heavy PC);SUV;Pick-ups;
Road conditions recommended	City road;Highway road;Suburban road;Country road; Hill road;

THANK YOU



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