




Physical Properties Test Report

Link Test Report: 101489-4-1
Test Description: SAE J661 Rev Feb 1997 Brake Lining Quality Test
Purpose of Test: To Evaluate the Characteristics of Brake Materials
Material Identification: D866
Test Date: 02/02/2019 - 02/02/2019

Requested By:

ROYAL BRAKES CANADA
Quality control Department
1500-701 WEST GEORGIA STREET
VANCOUVER, B.C. V7Y 1C6
CANADA

Report Approved by:



Supervising Engineer, M.Sc.

Date: 2/04/19



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SAE J661 Rev Feb 1997 Brake Lining Quality Test

Test Information

Customer Name	ROYAL BRAKES CANADA
Requestor	Quality control
Test Procedure	SAE J661
Program Number	J661noinsp.chp
Test Coordinator	CA
Test Equipment	Chase Machine #5531
Test Dates	02/02/2019 - 02/02/2019
Datalogger	v1.0.10
Template Version	3.00

Setup Details

Sample Material	D866
Sample Size	25.4 mm x 25.4 mm
Sample Manufacturer	ROYAL BRAKES CANADA
Test Pressure	1034 kPa

Sample Test Summary

Normal Friction Coefficient	0.404	Pass
Normal Friction Class	F	
Hot Friction Coefficient	0.376	Pass
Hot Friction Class	F	
Minimum Bold Coefficient	0.367	Pass
Max Variation Below Average for Bold Readings	0.000	Pass
Max % Variation for Bold Readings	0.00%	Pass

Pass / Fail

Pass

Comments:

Processed by:	Chris Arquette (313) 625-4000	Title:	Test Engineer	Date:	02/04/2019
Reviewed by:	Radoslaw Markiewicz (313) 625-4000	Title:	Supervising Engineer	Date:	02/04/2019

Data applicable to the materials tested. Report can be copied in full. Bilateral uncertainty of measurements 0.63% of FS. Coverage factor of 2. Confidence of 95%. Details available upon request.



Sample 1
101489-4-1

Test Number

Manufacturer
ROYAL BRAKES CANADA

Initial Baseline

Material
D866

Application Sample 1
1 0.372
20 0.380

Normal **0.404 F**

First Fade

Temp (°C) Sample 1
93.3 0.381
287.8 0.348
(or Temp @ 10min)

Hot **0.376 F**

First Recovery

Temp (°C) Sample 1
260.0 0.341
204.4 0.359
148.9 0.404
93.3 0.408

<u>Average</u>	<u>Norm/Hot</u>
0.341	
0.359	Hot
0.404	Hot
0.408	

Wear

Application Sample 1
1 0.386
100 0.398

Second Fade

Temp (°C) Sample 1
93.3 0.426
121.1 0.405
148.9 0.397
176.7 0.397
204.4 0.389
232.2 0.389
260.0 0.370
287.8 0.367
315.6 0.363
343.3 0.348
(or Temp @ 10min)

<u>Average</u>	<u>Max Var. < Average</u>	<u>Norm/Hot</u>	<u>% Var</u>
0.426	0.000	Normal	0%
0.405	0.000	Normal	0%
0.397	0.000	Normal	0%
0.397	0.000	-	0%
0.389	0.000	Normal	0%
0.389	0.000	Hot	0%
0.370	0.000	Hot	0%
0.367	0.000	Hot	0%
0.363	0.000	Hot	0%
0.348	0.000	Hot	0%

Second Recovery

Temp (°C) Sample 1
315.6 0.349
260.0 0.354
204.4 0.379
148.9 0.422
93.3 0.454

<u>Average</u>	<u>Max Var. < Average</u>	<u>Norm/Hot</u>	<u>% Var</u>
0.349	0.000	-	0%
0.354	0.000	Hot	0%
0.379	0.000	Hot	0%
0.422	0.000	Hot	0%
0.454	0.000	-	0%

Final Baseline

Application Sample 1
1 0.463
20 0.443



Manufacturer: ROYAL BRAKES CANADA
Material: D866
Test Pressure: 1034 kPa

Normal **0.404**

F

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Hot **0.376**

F

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Sample 1 of 1

Wear

	Initial	Final	Loss	Loss / %
Weight (gram)	11.353	11.122	0.231	2.03
Thickness (mm)	0.264	0.257	0.007	2.65
Indicator	N/A	N/A	N/A	N/A

Baseline

Event	Initial		Final	
	Force (N)	μ	Force (N)	μ
1	248.9	0.372	308.3	0.463
5	241.3	0.361	308.8	0.462
10	246.5	0.369	298.3	0.445
15	250.9	0.376	302.8	0.453
20	252.8	0.380	295.2	0.443

Wear

Event	Force (N)	μ
1	256.9	0.386
10	250.7	0.376
20	251.5	0.377
30	252.5	0.377
40	249.4	0.374
50	273.3	0.409
60	253.3	0.380
70	254.2	0.381
80	251.8	0.376
90	250.0	0.375
100	265.6	0.398

First Fade

Time (sec)	Force (N)	μ	Temp (°C)
0.0	250.0	0.380	82
30.0	250.9	0.376	104
60.0	248.5	0.373	123
90.0	254.7	0.382	143
120.0	246.4	0.369	162
150.0	260.1	0.389	183
180.0	280.4	0.421	205
210.0	282.8	0.426	229
240.0	277.3	0.416	249
270.0	255.8	0.384	269
300.0	235.0	0.352	286
306.0	232.2	0.319	289

Second Fade

Time (sec)	Force (N)	μ	Temp (°C)
0.0	259.0	0.394	82
30.0	279.2	0.419	106
60.0	270.9	0.406	129
90.0	264.4	0.396	151
120.0	266.2	0.399	172
150.0	262.0	0.392	193
180.0	255.6	0.384	213
210.0	257.8	0.386	233
240.0	253.5	0.380	252
270.0	246.6	0.369	272
300.0	243.9	0.365	290
330.0	241.3	0.362	306
360.0	239.0	0.359	322
390.0	235.9	0.353	337
405.3	232.1	0.316	345

First Recovery

Event	Force (N)	μ	Temp (°C)
1	227.1	0.341	261
2	240.7	0.359	209
3	268.9	0.404	157
4	271.4	0.408	103

Second Recovery

Event	Force (N)	μ	Temp (°C)
1	233.1	0.349	312
2	236.5	0.354	259
3	253.0	0.379	206
4	281.2	0.422	152
5	303.2	0.454	99



Manufacturer: ROYAL BRAKES CANADA
Material: D866
Test Pressure: 1034 kPa

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Coefficient of Friction

