



Sample Lab Test Report

Link Test Report: 110691-1
Test Description: SAE J661 Rev Feb 1997 Brake Lining Quality
Purpose of Test: To Evaluate the Characteristics of Brake
Materials
Program: J661noinsp.chp
Lining Material: N/A
Test Date(s): 2/23/2011 to 2/23/2011

Requested By

HARDEX BRAKES LTD
Harry
200-1311 Howe Street
Vancouver, Bc V6Z 2P3,

CANADA

Testing Coordination and Facility
North America Laboratory Test Operations
13840 Elmira Ave.
Detroit, MI 48227
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Test Number
110691-1

Customer Reference
N/A

SAE J661 Rev Feb 1997 Brake Lining Quality Test

Test Information

Customer Name	Hardex Brakes Ltd
Requestor	Harry
Test Procedure	SAE J661
Program Number	J661noinsp.chp
Test Coordinator	FOREN, TODD
Test Equipment	Chase Machine 0013
Test Dates	2/23/2011 to 2/23/2011
Datalogger	v1.0.10
Template Version	2.00

Setup Details

Sample Material	N/A
Sample Size	1" X 1"
Sample Manufacturer	Hardex Brakes Ltd
Test Pressure	150 psi

Sample Test Summary

Normal Friction Coefficient	0.453	Pass
Normal Friction Class	G	
Hot Friction Coefficient	0.412	Pass
Hot Friction Class	F	
Minimum Bold Coefficient	0.418	Pass
Max Variation Below Average	0.000	Pass
Max % Variation for Bold Readings	0%	Pass

Pass / Fail

Pass

Comments:

Created by: Todd Foren **Title** Test Engineer **Date** 2/24/2011
(313) 933-4900

Reviewed by: Todd Foren **Title** Test Engineer **Date** 2/24/2011
(313) 933-4900

Data applicable to the materials tested. **Valid if signed by the test engineer.** 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.



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Customer Reference
N/A

Test Number
Sample 1 Sample 2 Sample 3 Sample 4 Sample 5
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Manufacturer
HARDEX BRAKES

Initial Baseline
Application Sample 1 Sample 2 Sample 3 Sample 4 Sample 5
1 0.378
20 0.411

Material
N/A

Normal **0.453** **G**

First Fade
Temp (F) Sample 1 Sample 2 Sample 3 Sample 4 Sample 5
200 0.409
500 0.388
(or Temp @ 10min)

Hot **0.412** **F**

First Recovery
Temp (F) Sample 1 Sample 2 Sample 3 Sample 4 Sample 5 Average Norm/Hot
500 0.362 0.362
400 0.371 0.371 Hot
300 0.389 0.389 Hot
200 0.407 0.407

Wear
Application Sample 1 Sample 2 Sample 3 Sample 4 Sample 5
1 0.419
100 0.455

Second Fade
Temp (F) Sample 1 Sample 2 Sample 3 Sample 4 Sample 5 Average Max Var.
< Average Norm/Hot % Var
200 0.442 0.442 0.000 Normal
250 0.462 0.462 0.000 Normal
300 0.468 0.468 0.000 Normal
350 0.452 0.452 0.000 Normal
400 0.439 0.439 0.000 Normal
450 0.439 0.439 0.000 Hot
500 0.422 0.422 0.000 Hot
550 0.418 0.418 0.000 Hot
600 0.385 0.385 0.000 Hot
650 Hot
(or Temp @ 10min)

Second Recovery
Temp (F) Sample 1 Sample 2 Sample 3 Sample 4 Sample 5 Average Max Var.
< Average Norm/Hot % Var
600 0.410 0.410 0.000
500 0.417 0.417 0.000 Hot
400 0.440 0.440 0.000 Hot
300 0.427 0.427 0.000 Hot
200 0.441 0.441 0.000

Final Baseline
Application Sample 1 Sample 2 Sample 3 Sample 4 Sample 5
1 0.456
20 0.467



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Customer Reference
N/A

Manufacturer: HARDEX BRAKES
Material: N/A
Test Pressure: 150 psi

Normal **0.453** **G**
Hot **0.412** **F**

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Wear

	Initial	Final	Loss		Specific Wear	
Weight (gr)	9.884	9.754	0.13	1%	8.68E-04	gr/hp-hr
Thickness (in)	0.222	0.216	0.006	3%	4.00E-05	in ³ /hp-hr

Baseline

Event	Initial		Final	
	Force (lb)	μ	Force (lb)	μ
1	58	0.378	69	0.456
5	60	0.398	70	0.470
10	62	0.405	71	0.472
15	62	0.407	71	0.469
20	62	0.411	71	0.467

Wear

Event	Force (lb)	μ
1	62	0.419
10	63	0.421
20	65	0.432
30	67	0.445
40	68	0.454
50	67	0.451
60	68	0.456
70	69	0.455
80	67	0.440
90	68	0.454
100	68	0.455

First Fade

Time (sec)	Force (lb)	μ	Temp (°F)
0	62	0.409	225
30	62	0.412	262
60	61	0.402	298
90	60	0.397	335
120	60	0.398	371
150	60	0.400	408
180	60	0.399	443
210	59	0.391	477
240	57	0.377	508
270	56	0.374	538
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

Second Fade

Time (sec)	Force (lb)	μ	Temp (°F)
0	67	0.442	213
30	70	0.464	256
60	71	0.468	296
90	69	0.454	337
120	68	0.454	377
150	68	0.447	419
180	66	0.441	455
210	66	0.436	491
240	63	0.422	526
270	62	0.415	557
300	60	0.399	584
330	60	0.396	611
360	58	0.389	634
390			
420			
450			
480			
510			
540			
570			
600			

First Recovery

Event	Force (lb)	μ	Temp (°F)
1	58	0.362	499
2	55	0.371	400
3	57	0.389	301
4	60	0.407	201

Second Recovery

Event	Force (lb)	μ	Temp (°F)
1	65	0.410	600
2	61	0.417	499
3	65	0.440	400
4	63	0.427	301
5	64	0.441	202



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Manufacturer: HARDEX BRAKES
Material: N/A
Test Pressure: 150 psi

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Coefficient of Friction

