



## Sample Lab Test Report

Link Test Report:	137194-1
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:	TC BNJ01
Test Date(s):	1/20/2014 to 1/25/2014

## Requested By

**YANCHENG TIANCHI AUTO FITTING CO., LTD**  
BILL CHEN  
YANGXU INDUSTRIAL ZONE  
PANHUANG TOWN, YANDU DISTRICT  
YANCHENG CITY JIANGSU PROVINCE  
R.R. CHINA

## Tested By:

**Testing Coordination and Facility**  
North America Laboratory Test Operations  
13840 Elmira Ave.  
Detroit, MI 48227  
[www.linkeng.com](http://www.linkeng.com)  
Phone: (313) 933-4900  
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Test Number  
137194-1

Customer Reference  
TC BNJ01

### SAE J661 Rev Feb 1997 Brake Lining Quality Test

#### Test Information

Customer Name Yancheng Tianchi Auto Fitting Co., Ltd  
Requestor Bill Chen  
Test Procedure SAE J661  
Program Number J661noinsp.chp  
Test Coordinator COLEMAN, TIM  
Test Equipment Chase Machine 0013  
Test Dates 1/20/2014 to 1/25/2014  
Datalogger v1.0.10  
Template Version 2.01

#### Setup Details

Sample Material TC BNJ01  
Sample Size 25.4mm x 25.4mm  
Sample Manufacturer Yancheng Tianchi Auto Fitting Co., Ltd  
Test Pressure 1034.21 kPa

#### Sample Test Summary

Normal Friction Coefficient	0.389	Pass
Normal Friction Class	F	
Hot Friction Coefficient	0.378	Pass
Hot Friction Class	F	
Minimum Bold Coefficient	0.331	Pass
Max Variation Below Average	0.046	Pass
Max % Variation for Bold Readings	0%	Pass

Pass / Fail

**Pass**

Comments:

<b>Created by:</b>	Timothy Coleman (313) 625-4000	<b>Title</b>	Lead Technician	<b>Date</b>	1/27/2014
<b>Reviewed by:</b>	Timothy Coleman (313) 625-4000	<b>Title</b>	Lead Technician	<b>Date</b>	1/27/2014

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.



Test Number  
137194-1

Customer Reference  
TC BNJ01

Test Number						Manufacturer			
Sample 1	Sample 2	Sample 3	Sample 4	Sample 5		YANCHENG TIANCHI			
137194-A1	137194-A2	137194-A3	137194-A4	137194-A5					
<b>Initial Baseline</b>						Material			
Application	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	TC BNJ01			
1	0.475	0.486	0.474	0.410	0.423				
20	0.465	0.496	0.495	0.436	0.434				
<b>First Fade</b>						Normal			
Temp (°C)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	0.389 <b>F</b>			
93.3	0.456	0.477	0.471	0.413	0.423				
260.0	0.366	0.360	0.357	0.368	0.380	Hot 0.378 <b>F</b>			
(or Temp @ 10min)									
<b>First Recovery</b>									
Temp (°C)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Average	Norm/Hot		
260.0	0.395	0.389	0.382	0.376	0.376	0.384			
204.4	0.434	0.416	0.404	0.404	0.409	0.413	Hot		
148.9	0.452	0.431	0.425	0.437	0.434	0.436	Hot		
93.3	0.450	0.444	0.433	0.421	0.438	0.437			
<b>Wear</b>									
Application	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5				
1	0.440	0.446	0.450	0.435	0.447				
100	0.337	0.386	0.370	0.355	0.366				
<b>Second Fade</b>						Max Var.			
Temp (°C)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Average	< Average	Norm/Hot	% Var
93.3	0.374	0.410	0.419	0.331	0.352	0.377	0.046	Normal	
121.1	0.395	0.423	0.436	0.367	0.386	0.401	0.034	Normal	
148.9	0.386	0.417	0.429	0.357	0.396	0.397	0.040	Normal	
176.7	0.384	0.400	0.404	0.362	0.385	0.387	0.025	Normal	
204.4	0.384	0.401	0.388	0.347	0.377	0.379	0.032	Normal	
232.2	0.382	0.386	0.379	0.354	0.368	0.374	0.020	Hot	
260.0	0.374	0.386	0.382	0.362	0.371	0.375	0.013	Hot	
287.8	0.356	0.366	0.371	0.352	0.366	0.362	0.010	Hot	
315.6	0.341	0.350	0.349	0.349	0.355	0.349	0.008	Hot	
343.3	0.325	0.325	0.346	0.330	0.334	0.332	0.007	Hot	
(or Temp @ 10min)									
<b>Second Recovery</b>						Max Var.			
Temp (°C)	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Average	< Average	Norm/Hot	% Var
315.6	0.338	0.346	0.362	0.342	0.344	0.346	0.008		
260.0	0.357	0.367	0.382	0.354	0.357	0.363	0.009	Hot	
204.4	0.369	0.352	0.420	0.370	0.372	0.377	0.025	Hot	
148.9	0.401	0.409	0.437	0.365	0.391	0.401	0.036	Hot	
93.3	0.374	0.377	0.434	0.358	0.387	0.386	0.028		
<b>Final Baseline</b>									
Application	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5				
1	0.404	0.393	0.420	0.341	0.384				
20	0.406	0.423	0.417	0.386	0.413				





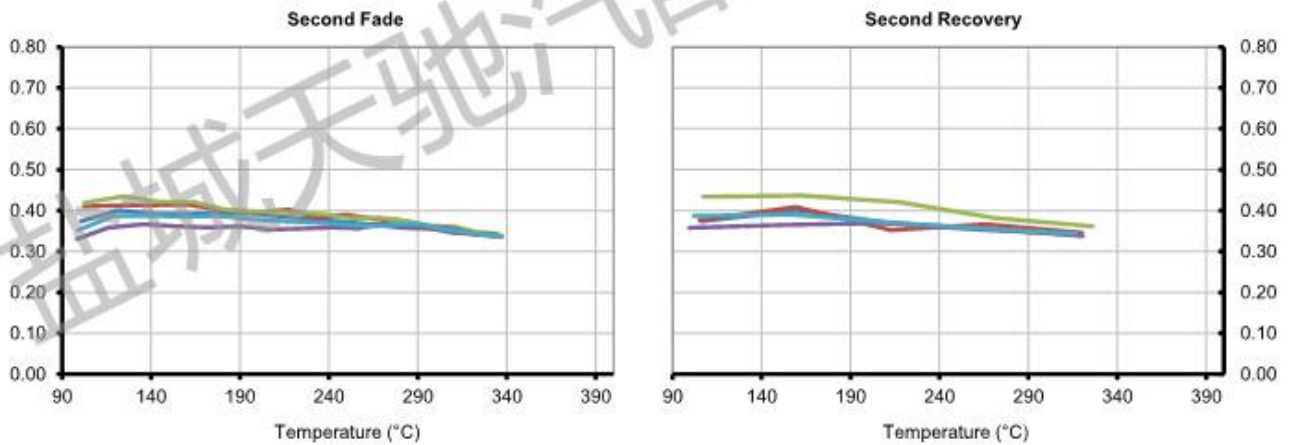
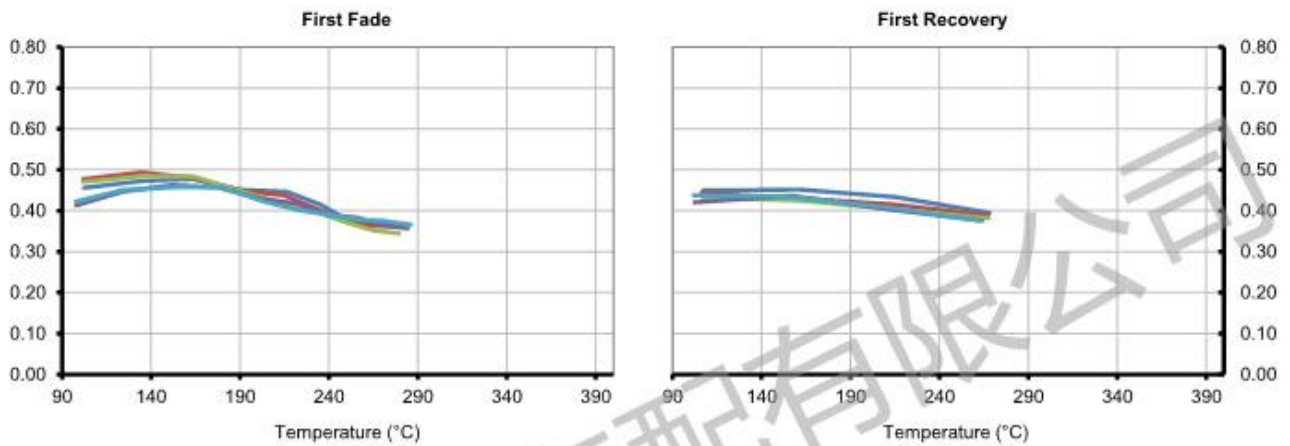
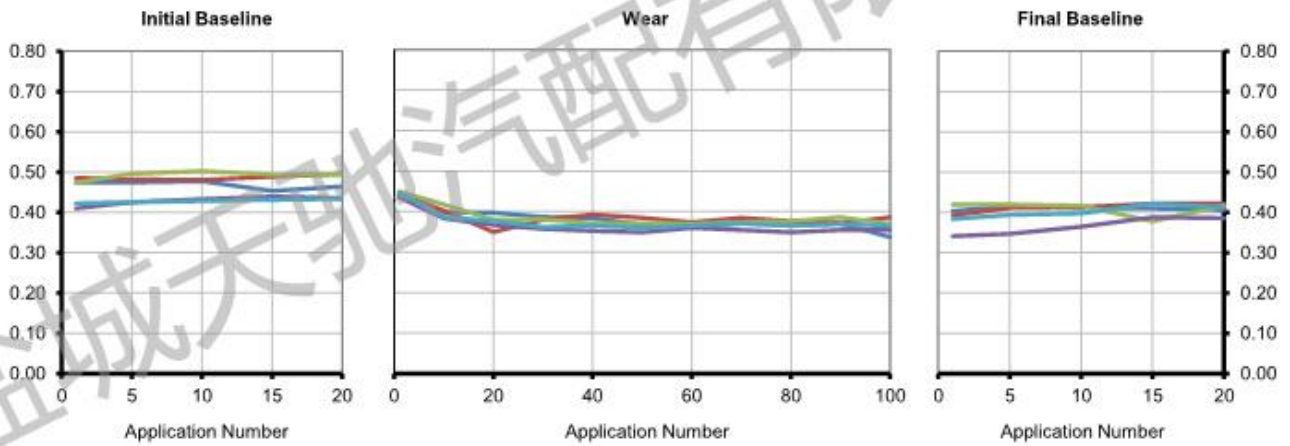
Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI AUTO FITTING CO., LTD  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/20/2014 to 1/25/2014  
Summary of 5 Samples

### Coefficient of Friction





Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

Normal **0.385** **F**  
Hot **0.379** **F**

1/20/2014  
137194-A1  
Sample 1 of 5

**Wear**

	Initial	Final	Loss		Specific Wear	
Weight (gr)	7.871	7.422	0.449	6%	2.69E-01	gr/kWh
Thickness (cm)	0.594	0.574	0.02	3%	7.72E-02	cm <sup>3</sup> /kWh

**Baseline**

Event	Initial		Final	
	Force (N)	$\mu$	Force (N)	$\mu$
1	322	0.475	276	0.404
5	314	0.475	283	0.416
10	322	0.478	277	0.412
15	304	0.454	271	0.410
20	312	0.465	278	0.406

**Wear**

Event	Force (N)	$\mu$
1	296	0.440
10	270	0.399
20	269	0.397
30	256	0.387
40	256	0.384
50	246	0.368
60	243	0.362
70	242	0.371
80	249	0.368
90	246	0.371
100	224	0.337

**First Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	306	0.456	102
30	317	0.473	134
60	320	0.478	163
90	303	0.451	191
120	296	0.447	216
150	266	0.414	236
180	255	0.376	251
210	245	0.367	267
240	243	0.367	281
270			
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

**Second Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	244	0.374	101
30	261	0.401	121
60	265	0.393	142
90	262	0.392	160
120	265	0.395	179
150	254	0.392	198
180	253	0.384	216
210	253	0.377	235
240	246	0.371	253
270	237	0.364	269
300	234	0.358	282
330	241	0.356	297
360	231	0.345	311
390	228	0.345	322
420	230	0.338	334
450			
480			
510			
540			
570			
600			

**First Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	261	0.395	268
2	285	0.434	215
3	294	0.452	162
4	295	0.450	107

**Second Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	222	0.338	321
2	245	0.357	266
3	254	0.369	213
4	271	0.401	160
5	246	0.374	106



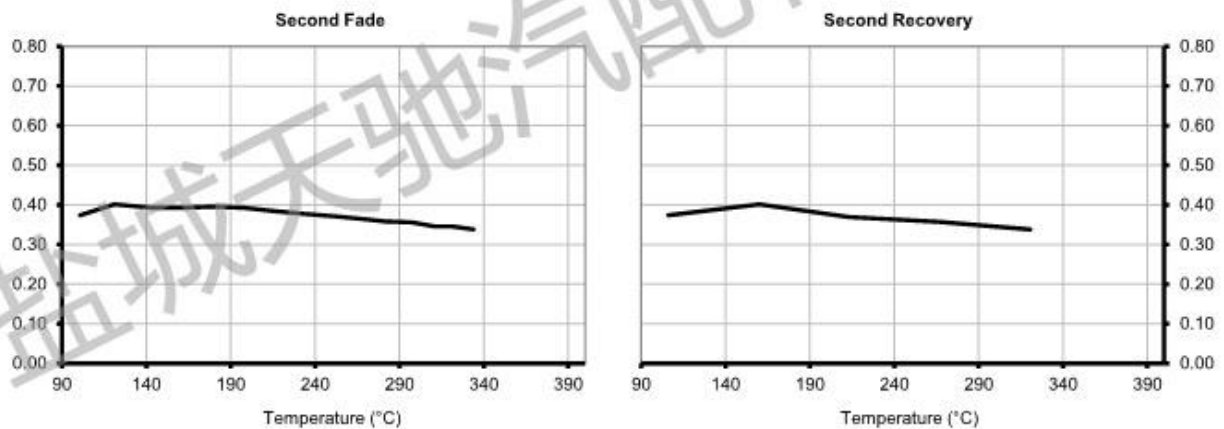
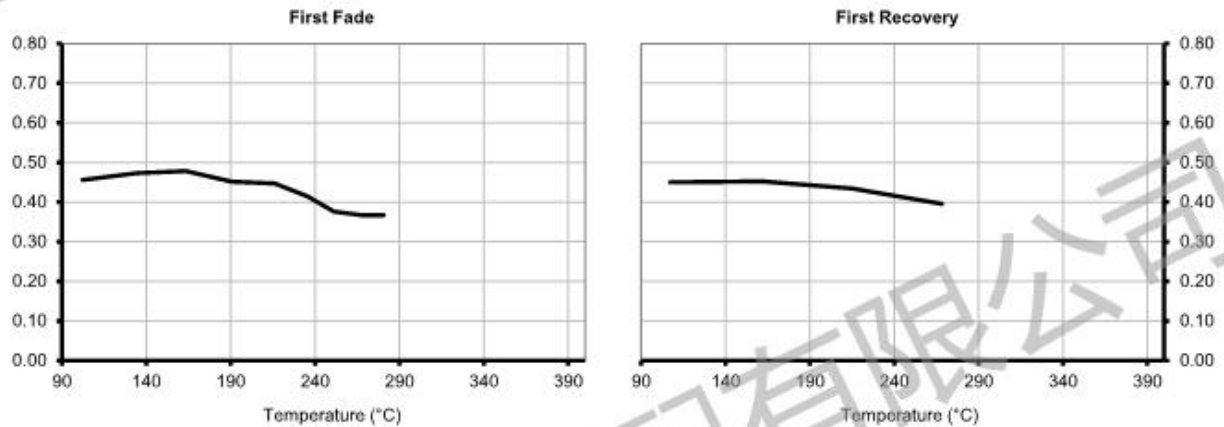
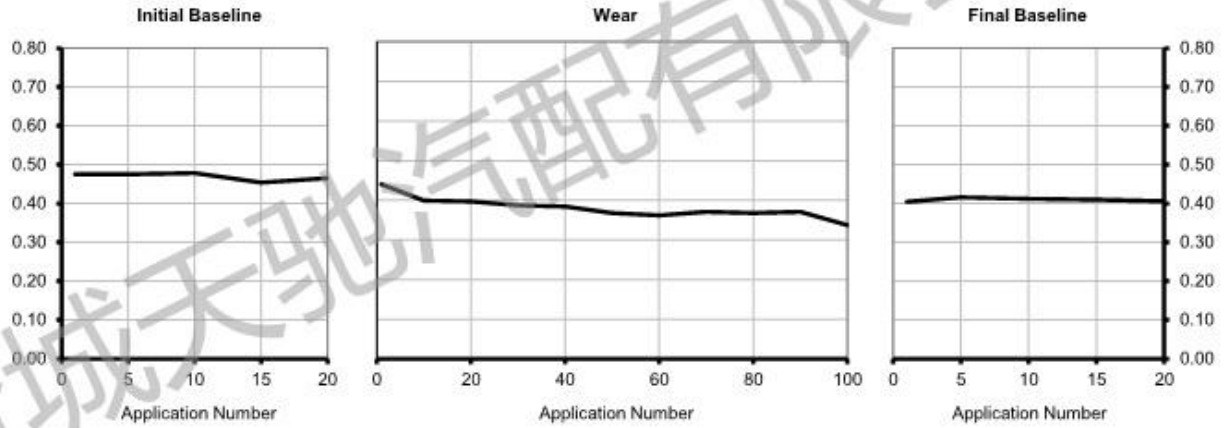
Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/20/2014  
137194-A1  
Sample 1 of 5

### Coefficient of Friction







Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

Normal **0.410**  
Hot **0.379**

**F**  
**F**

1/21/2014  
137194-A2  
Sample 2 of 5

**Wear**

	Initial	Final	Loss	Specific Wear
Weight (gr)	7.942	7.496	0.446	2.60E-01 gr/kWh
Thickness (cm)	0.597	0.577	0.02	7.52E-02 cm <sup>3</sup> /kWh

**Baseline**

Event	Initial		Final	
	Force (N)	$\mu$	Force (N)	$\mu$
1	321	0.486	265	0.393
5	323	0.482	270	0.411
10	320	0.481	277	0.413
15	323	0.489	274	0.422
20	328	0.496	274	0.423

**Wear**

Event	Force (N)	$\mu$
1	290	0.446
10	273	0.402
20	235	0.350
30	258	0.380
40	266	0.393
50	257	0.385
60	258	0.374
70	258	0.385
80	256	0.377
90	252	0.372
100	256	0.386

**First Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	310	0.477	102
30	337	0.494	134
60	320	0.479	164
90	306	0.449	191
120	291	0.438	214
150	268	0.403	234
180	249	0.372	251
210	241	0.362	266
240	238	0.362	281
270			
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

**Second Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	272	0.410	102
30	277	0.413	124
60	278	0.414	144
90	272	0.414	162
120	266	0.400	181
150	264	0.396	200
180	267	0.402	217
210	255	0.383	233
240	252	0.390	249
270	250	0.379	266
300	249	0.377	279
330	240	0.359	291
360	236	0.355	303
390	231	0.345	315
420	227	0.340	327
450	224	0.337	337
480			
510			
540			
570			
600			

**First Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	260	0.389	267
2	278	0.416	214
3	296	0.431	160
4	300	0.444	106

**Second Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	230	0.346	320
2	238	0.367	266
3	234	0.352	213
4	268	0.409	159
5	252	0.377	105



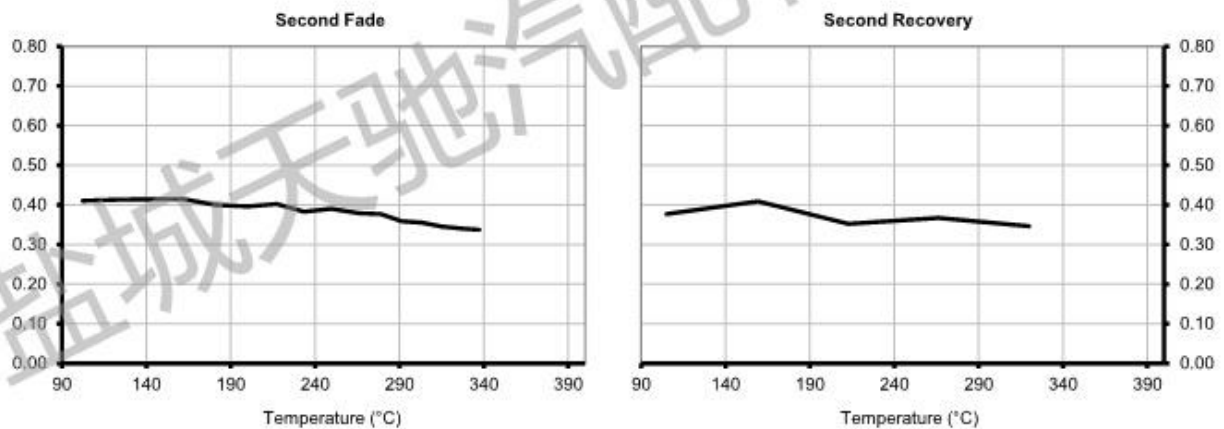
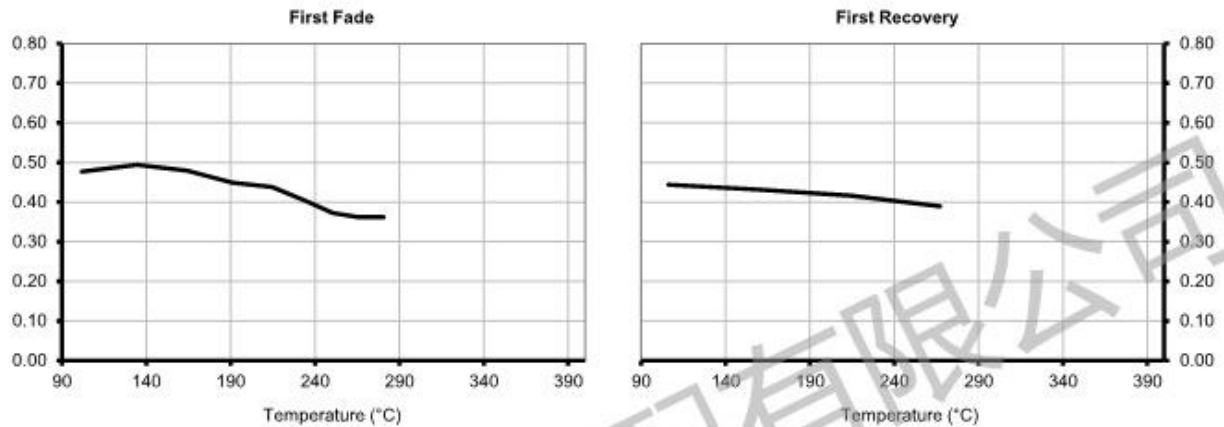
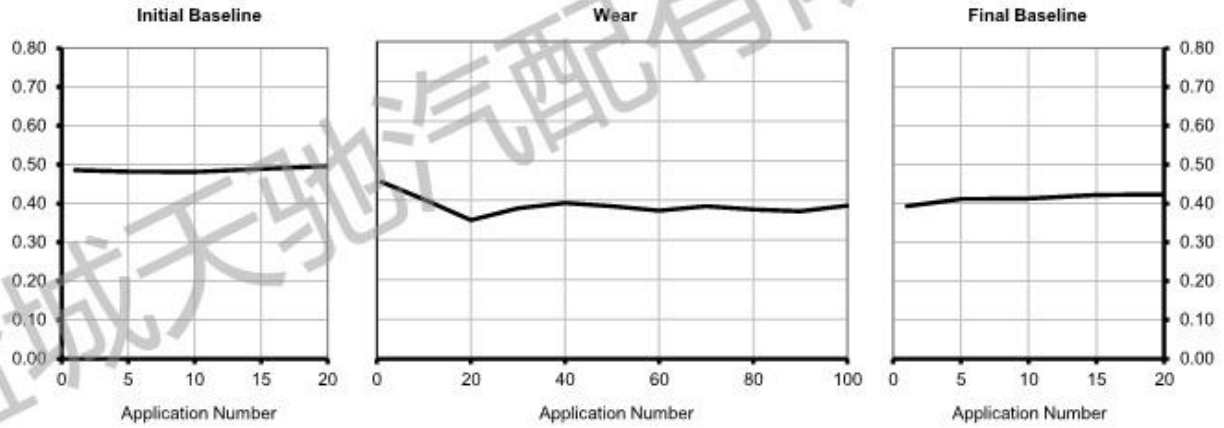
Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/21/2014  
137194-A2  
Sample 2 of 5

### Coefficient of Friction







Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

Normal **0.415** **F**  
Hot **0.390** **F**

1/21/2014  
137194-A3  
Sample 3 of 5

**Wear**

	Initial	Final	Loss		Specific Wear	
Weight (gr)	8.082	7.606	0.476	6%	2.80E-01	gr/kWh
Thickness (cm)	0.607	0.587	0.02	3%	7.60E-02	cm <sup>3</sup> /kWh

**Baseline**

Event	Initial		Final	
	Force (N)	$\mu$	Force (N)	$\mu$
1	315	0.474	282	0.420
5	331	0.496	279	0.420
10	336	0.503	282	0.417
15	333	0.494	253	0.378
20	318	0.495	281	0.417

**Wear**

Event	Force (N)	$\mu$
1	299	0.450
10	282	0.418
20	254	0.380
30	254	0.381
40	241	0.371
50	249	0.372
60	248	0.370
70	246	0.374
80	253	0.377
90	256	0.386
100	245	0.370

**First Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	314	0.471	102
30	324	0.485	136
60	327	0.484	164
90	300	0.449	190
120	278	0.420	212
150	265	0.397	233
180	249	0.372	249
210	233	0.352	265
240	234	0.345	279
270			
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

**Second Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	281	0.419	102
30	285	0.435	124
60	280	0.422	144
90	274	0.421	164
120	266	0.402	182
150	264	0.398	201
180	265	0.396	218
210	264	0.392	236
240	255	0.381	253
270	256	0.383	268
300	249	0.375	284
330	238	0.363	297
360	239	0.361	311
390	230	0.349	322
420	231	0.344	335
450			
480			
510			
540			
570			
600			

**First Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	255	0.382	268
2	272	0.404	214
3	290	0.425	162
4	290	0.433	107

**Second Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	241	0.362	326
2	254	0.382	271
3	276	0.420	218
4	292	0.437	163
5	287	0.434	107



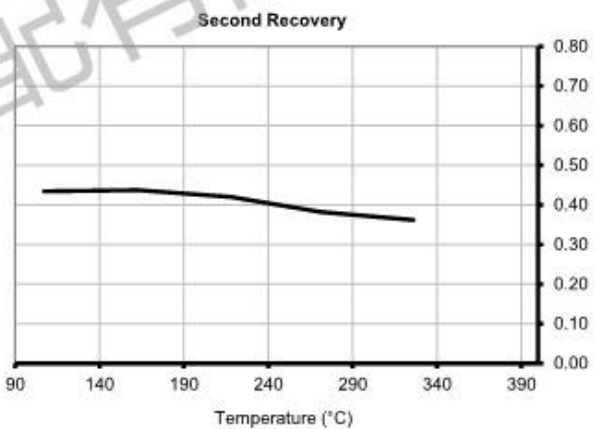
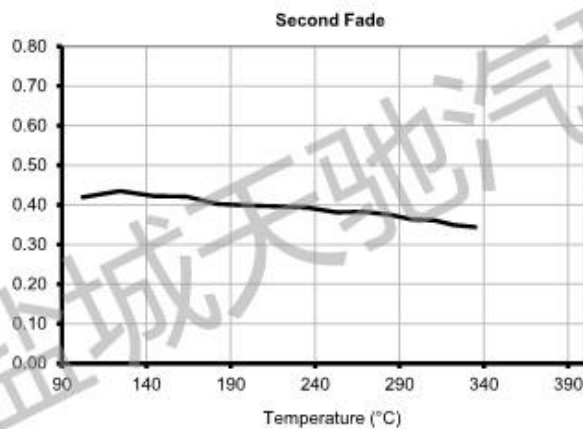
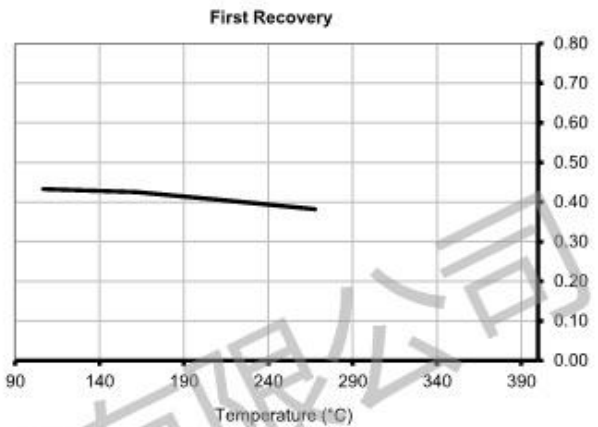
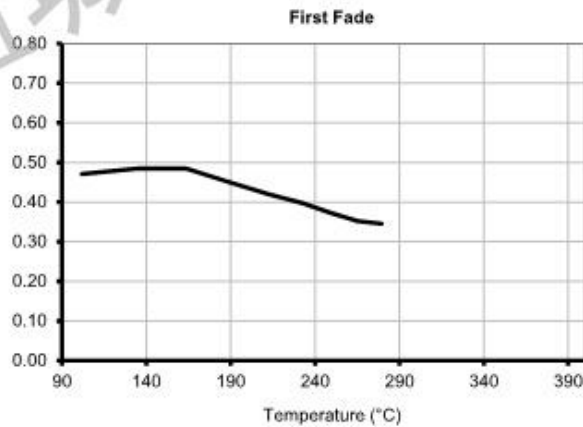
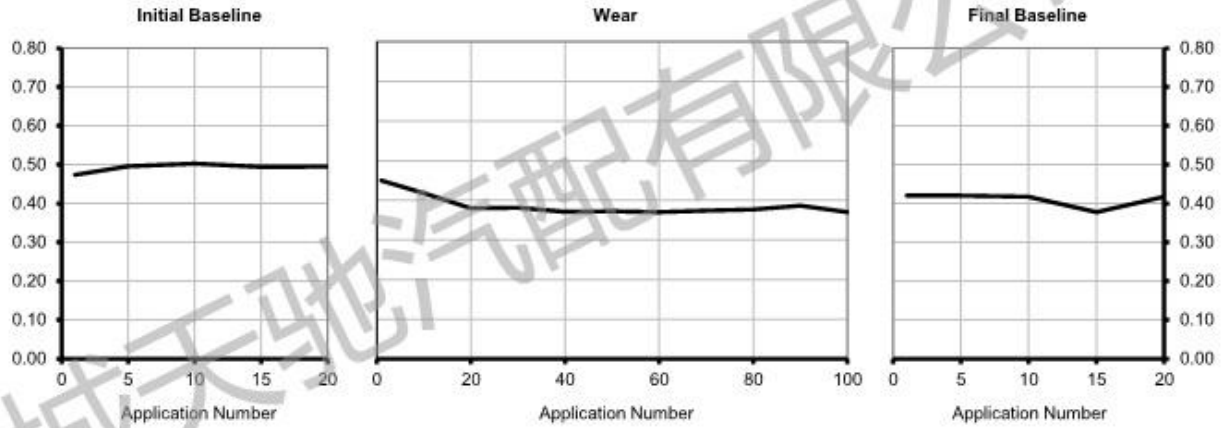
Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/21/2014  
137194-A3  
Sample 3 of 5

### Coefficient of Friction





Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

Normal **0.353**  
Hot **0.368**

**F**  
**F**

1/25/2014  
137194-A4  
Sample 4 of 5

**Wear**

	Initial	Final	Loss	Specific Wear
Weight (gr)	8.036	7.591	0.445	2.77E-01 gr/kWh
Thickness (cm)	0.607	0.579	0.028	1.12E-01 cm <sup>3</sup> /kWh

**Baseline**

Event	Initial		Final	
	Force (N)	$\mu$	Force (N)	$\mu$
1	277	0.410	224	0.341
5	284	0.426	232	0.347
10	287	0.433	245	0.365
15	286	0.440	254	0.388
20	291	0.436	255	0.386

**Wear**

Event	Force (N)	$\mu$
1	291	0.435
10	254	0.383
20	248	0.367
30	238	0.358
40	234	0.353
50	237	0.349
60	237	0.360
70	232	0.355
80	235	0.349
90	234	0.355
100	231	0.355

**First Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	275	0.413	98
30	298	0.447	124
60	303	0.463	152
90	307	0.458	177
120	296	0.430	201
150	278	0.418	222
180	261	0.390	240
210	253	0.383	256
240	243	0.364	271
270	236	0.357	284
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

**Second Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	221	0.331	98
30	241	0.358	116
60	246	0.367	136
90	242	0.362	154
120	243	0.359	172
150	241	0.362	190
180	236	0.354	207
210	236	0.356	224
240	244	0.359	241
270	241	0.357	257
300	246	0.370	271
330	238	0.358	286
360	234	0.360	299
390	234	0.355	311
420	232	0.342	323
450	225	0.341	334
480			
510			
540			
570			
600			

**First Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	249	0.376	264
2	268	0.404	211
3	291	0.437	157
4	274	0.421	102

**Second Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	223	0.342	317
2	234	0.354	262
3	250	0.370	208
4	242	0.365	154
5	238	0.358	99





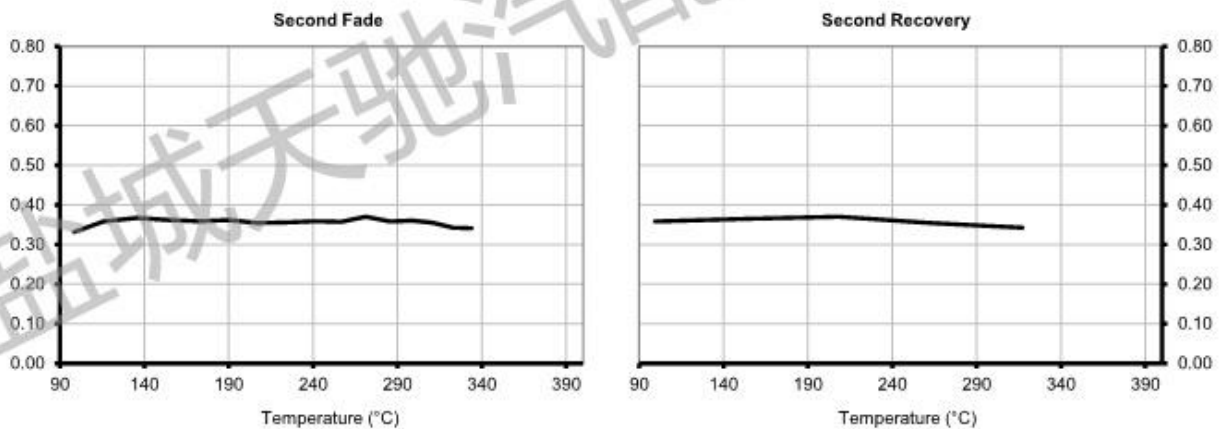
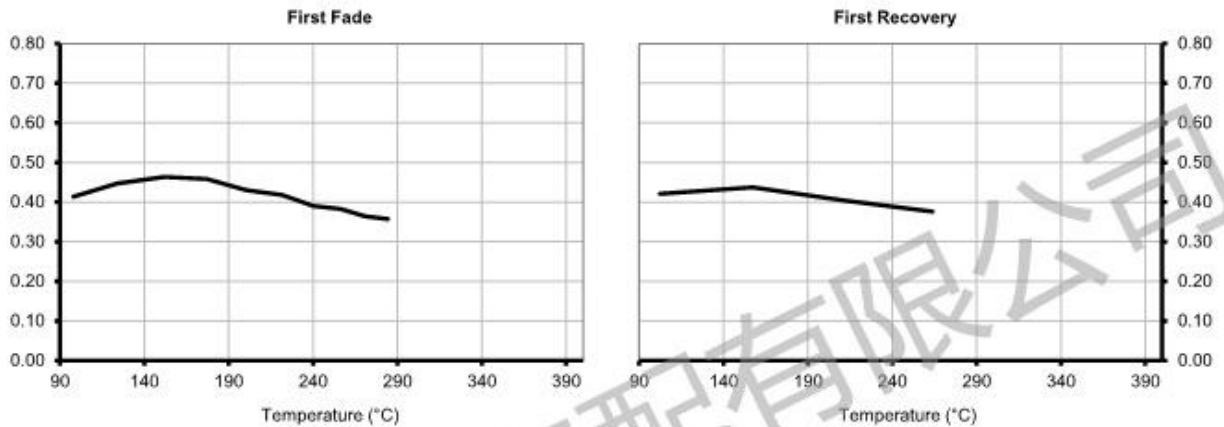
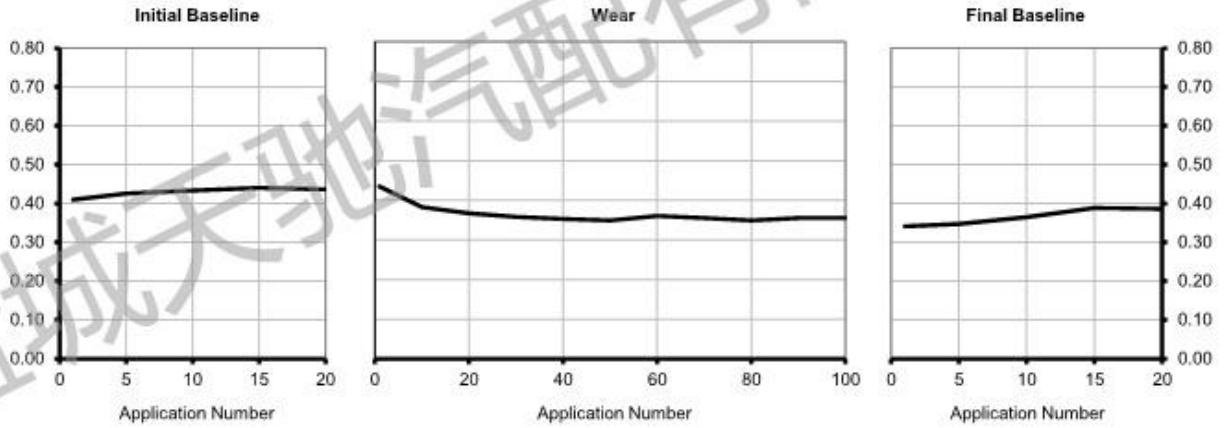
Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/25/2014  
137194-A4  
Sample 4 of 5

### Coefficient of Friction





Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

Normal **0.379** **F**  
Hot **0.376** **F**

1/25/2014  
137194-A5  
Sample 5 of 5

**Wear**

	Initial	Final	Loss	Specific Wear
Weight (gr)	8.056	7.592	0.464	2.81E-01 gr/kWh
Thickness (cm)	0.607	0.579	0.028	1.09E-01 cm <sup>3</sup> /kWh

**Baseline**

Event	Initial		Final	
	Force (N)	$\mu$	Force (N)	$\mu$
1	275	0.423	253	0.384
5	283	0.426	266	0.394
10	286	0.429	267	0.398
15	301	0.432	271	0.422
20	292	0.434	279	0.413

**Wear**

Event	Force (N)	$\mu$
1	299	0.447
10	256	0.387
20	251	0.377
30	243	0.362
40	245	0.366
50	236	0.360
60	245	0.366
70	247	0.371
80	238	0.365
90	246	0.369
100	246	0.366

**First Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	287	0.423	98
30	307	0.451	124
60	317	0.458	153
90	302	0.458	180
120	284	0.424	203
150	269	0.402	222
180	261	0.391	239
210	254	0.379	256
240	250	0.375	271
270	250	0.366	286
300			
330			
360			
390			
420			
450			
480			
510			
540			
570			
600			

**Second Fade**

Time (sec)	Force (N)	$\mu$	Temp (°C)
0	235	0.352	99
30	266	0.387	119
60	266	0.388	140
90	253	0.385	159
120	258	0.387	178
150	253	0.379	197
180	249	0.374	215
210	242	0.371	232
240	246	0.365	249
270	244	0.362	264
300	244	0.367	279
330	246	0.367	292
360	234	0.354	304
390	234	0.348	316
420	224	0.341	327
450	225	0.337	337
480			
510			
540			
570			
600			

**First Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	250	0.376	263
2	272	0.409	210
3	287	0.434	156
4	288	0.438	102

**Second Recovery**

Event	Force (N)	$\mu$	Temp (°C)
1	233	0.344	317
2	242	0.357	263
3	254	0.372	210
4	257	0.391	156
5	256	0.387	102



Test Number  
137194-1

Customer Reference  
TC BNJ01

Manufacturer: YANCHENG TIANCHI  
Material: TC BNJ01  
Test Pressure: 1034.21 kPa

1/25/2014  
137194-A5  
Sample 5 of 5

### Coefficient of Friction

