

115 Ridgetop Rd.  
 Toronto, ONT. M1P 4W9  
 Tel. (416) 494 1444 Ext 324



**NUCAP R&D CENTER**  
**SHEAR TEST REPORT**  
 v2007.10

NU-14C-ST1826  
 05/03/2014  
 01:08:52 PM

**Batch Information**

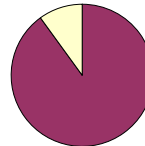
Nucap Test Number : NU-14C-ST1826	Test Type : Ambient Test
Batch Identification : D87	Lining reference : D87-I
Sample area at point of shear : 8093 mm <sup>2</sup>	Sample size : 1
Customer Contact Name : DAVID CAMERON	Sample Type : Full Pad
Test Engineer : N/A	Name of Tester : HARMINDER
Reference Number : N/A	Comments : D87 INNER PAD/CERAMIC
Location Clean Areas : N/A	Deviation from test procedure : N/A

**Test Parameters**

Load rate : (4,500 +/- 1,000) N/s	Loading tool radius : (1.5 +/- 0.5) mm
Distance from carrier to loading tool : (1 +/- 0.2) mm	Face load : (0.5 +/- 0.15) N/mm <sup>2</sup>

**Test Statistics**

Type of Statistic	Shear Strength	Failure Load
Minimum:	4.544 MPa	36771.988 N
Maximum:	4.544 MPa	36771.988 N
Median:	4.544 MPa	36771.988 N



Clean Percent  
 Adhesive Percent  
 Lining Percent

**Failure mode**

Clean carrier : 0.0%  
 Adhesive : 90.0%  
 Failure in lining : 10.0%

FIXTURE ID : D87  
 SPECIFIC GRAVITY :  
 Highest: N/A  
 Average: N/A  
 Lowest: N/A

UNDERLAYER (Yes/No): NO

**VISUAL INSPECTION:**

- |                            |    |                        |    |
|----------------------------|----|------------------------|----|
| 1) CRACKS:                 | NO | 5) LINING OFF CENTER:  | NO |
| 2) INCOMPLETE LINING:      | NO | 6) BENDINGS:           | NO |
| 3) INCOMPLETE BACK HOLES:  | NO | 7) OTHER TESTS IF ANY: | NO |
| 4) LINING/BACK PLATE GAPS: | NO |                        |    |

**Statistical Graph of Shear Strength Distribution**



3.58      5.58      7.58      9.58      11.58      13.58

(MPa)

Shear Strength   
  Median Shear Strength   
  25/75 Percentile Box

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Director R&D Group: **Abdool Azaad**

Date: 03/05/14



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**Data Values.**

Sample Number	Sample ID	Shear Load (N)	Shear Strength (MPa)	Failure Type
1	INNER	36771.99	4.54	Adhesive

There are no standards within the R-90 or SAE J840 for the retention or adhesion of friction materials to the backing plate, therefore the criteria and method applied is NUCAP'S interpretation and should be used only as a guide. It is important to note that the "Load achieved" to shear the disc brake pad, is the unit of measurement. However, the assessment of the test should be based on both: the load achieved and the type of failure. "The type of failure", by itself, can not be construed as a "pass/failure" test but the "load achieved" could. The failures are subject to our Customer interpretation.

**NOTES:**

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R&D Project Coordinator:

**Harminder Singh**

Date:

03/05/14





Nucap Test #: NU-14C-ST1826

Cust Ref. D87/INNER/CERAMIC

