Study and Analysis of Base line and Wear of Asbestos free Passenger Car Disc Brake Pad.

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Introduction: Disc brake pad is the important parameter in car from the security of the human and performance of vehicle. the purpose of brake is stop the vehicle in minimum distance with proper driver control on vehicle the stopping of vehicle is done because of rubbing and friction between the brake pad and disc the use of disc brake pad over the brake liner is because of its heat dissipate characteristics the principal of braking pad is that it stop the car by converting kinetic energy in to heat energy during this braking energy relies with friction material because of that wearing of brake pad that wearing is in proper way it will not rapidly wear out and chance of brake failure is minimized In order to manufacture effective brakes number of research carried out. this paper is mainly focus on base line and Wear characteristics of brake pad material as asbestos is ban because Medical research showed that asbestos fibers can lodge in the lungs and induce adverse respiratory conditions so non asbestos material is taken in generally the average asbestos free brake pad material is made from ten to twenty different material with proper composition .

Prepartion of Sample for Link chase machine: YXQYC machine is used to prepared sample of 25.4*25.4 by using grinding and cutting operation during the operation absorbing collector that maintain t he clean environmental

Principal of Link Chase Machine: as per SAE J661 norms the link chase 25.4mm*25.4mm sample hold in slot fit the sample of more than 5mm thickness with the help of bolt it is fitted them the 270 mm diameter drum is rotated with mottor and brake is applied with the help of double acting cylinder which activate because of pressurised air provided by compressor rubbing is takes place andop drum is stop the coefficient of friction is measured .µis measured.

Specification of the link chase machine used:

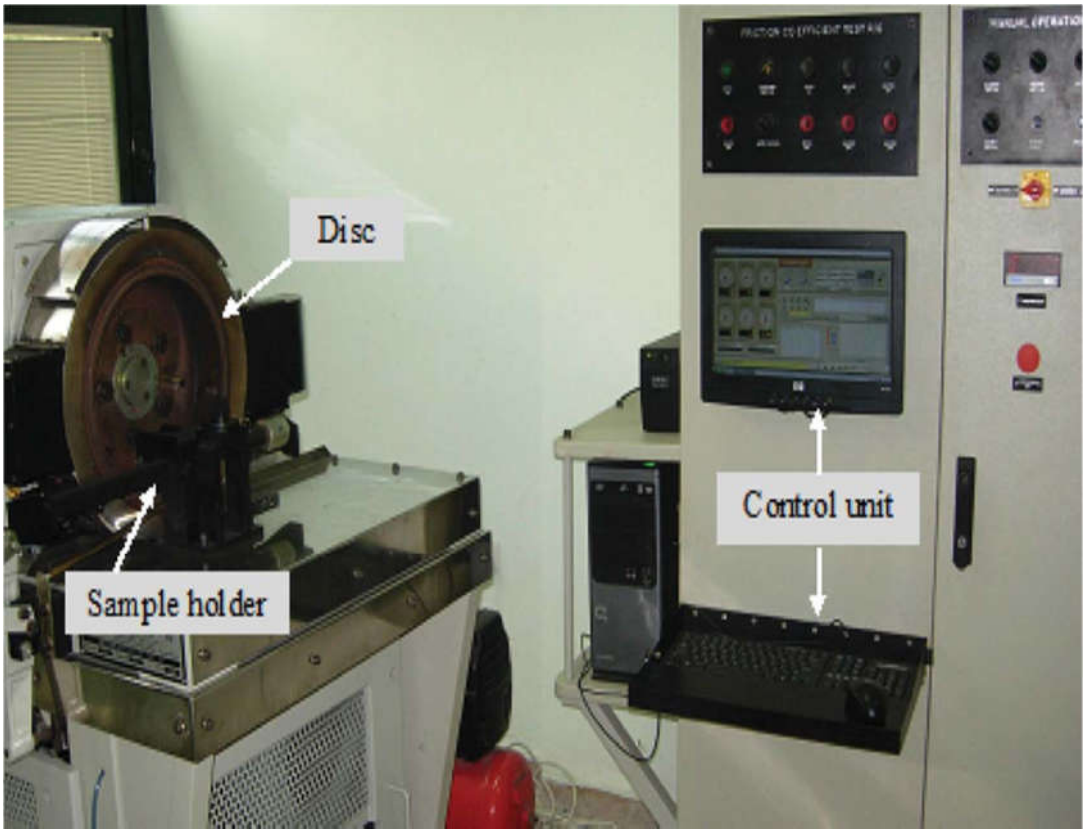
Sr.No.	Parameters	Unit	Min	Max	Remark
1	Drum Speed	Rpm	0	1200	
2	Test Load (Load Cell)	N	0	2000	
3	Drum Temperature	Degree C	0	750	Controlled with J661 requirement
4	Drum Inner Dia	MM	277	289	

link Chase Machine parameter

1. Speed of Drum Measured by Encoder.
2. Temperature Measured by K Type thermocouple.
3. Frriction Force Measured by Load Cell.

4 heater used for heating the drum.

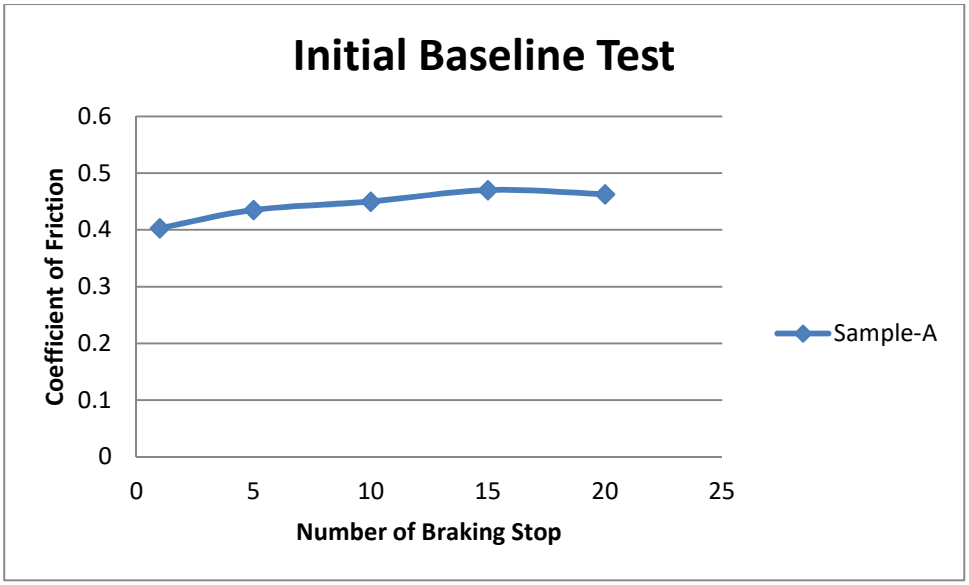
Fig.Link Chase Machine.



Initial Base line test:

Initial Base Line Test for Sample A

This test is important to match the profile of drum with Brake Pad In this test as per SAE procedure baseline-I operation is of 20 applications, where brake on for 10 second on and off in 20 second the μ is measured.



The value of μ of non asbestos disc brake pad for Sample A is as a function of coefficient of friction and application number for initial base line test Sample –A low fairly high coefficient of friction throughout the test .

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The coefficient of friction for sample is stable.

Wear Test:

Wear test Schedule

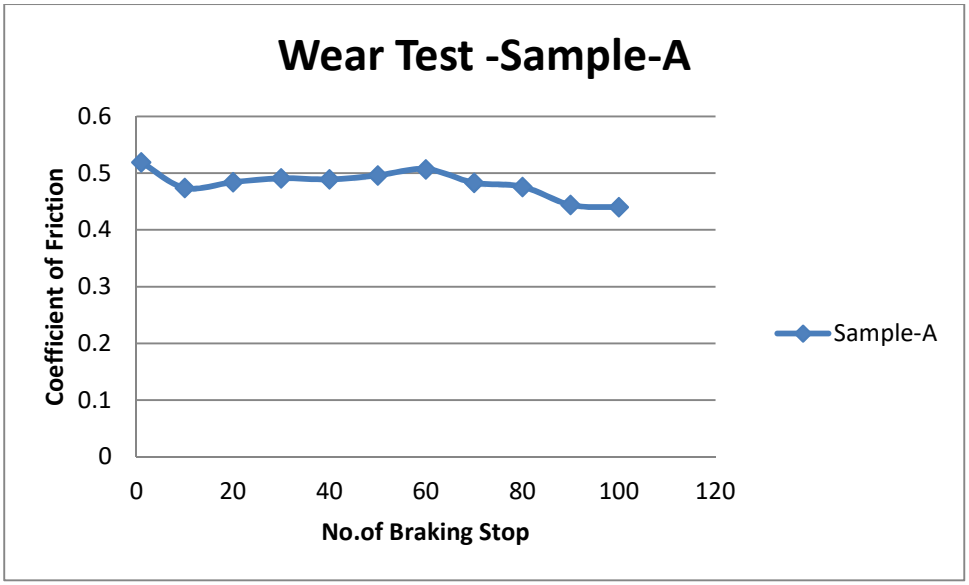
Min Temperature :93^0c

Max.Temperature:500^0C

Number of Cycle :100

Wear Test :

As per SAE procedure it consist of 100 applications , where brake is on for 20 s on and 10 s off. During this test the friction force readings taken..

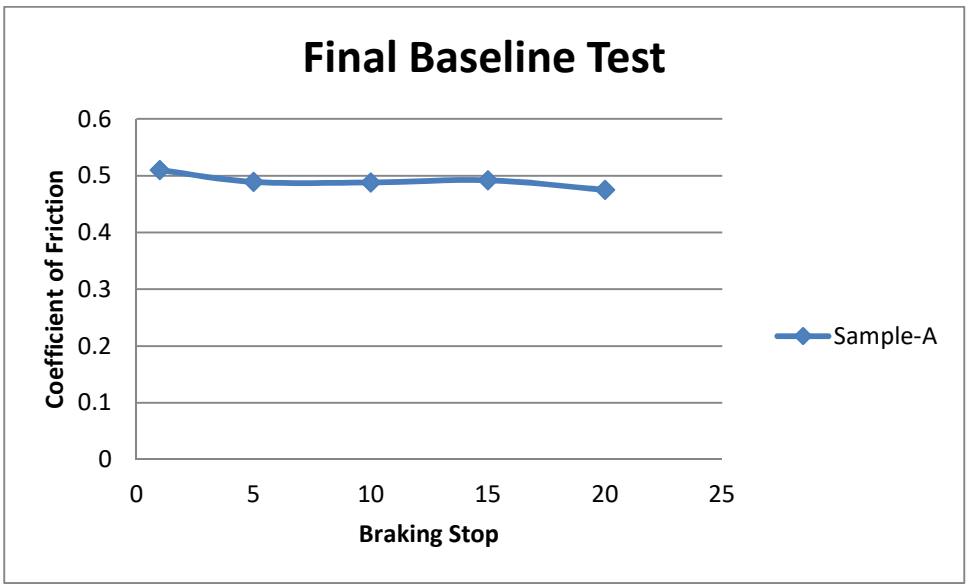


The μ of non asbestos disc brake pad of Sample-A is as function of coefficient of friction & application number of brake for wear test shows stable value of μ.

in general for Sample-A μ decreases as number of application increases,similiarly in Sample-A more fluctuations in μ.

Final Base Line Test

as per SAE procedure final baseline operation is of 20 applications, where brake on for 10 second on and off in 20 second.

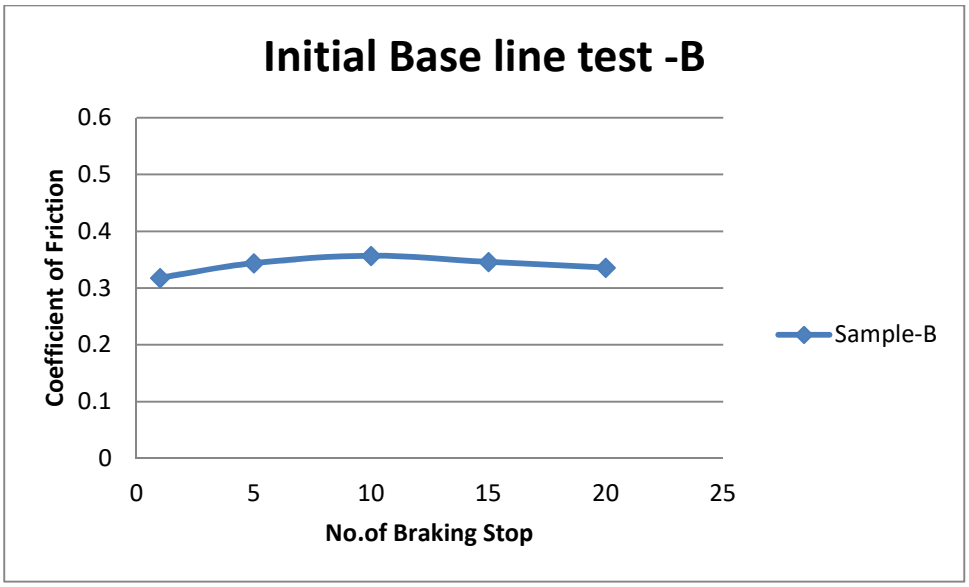


The μ of non asbestos disc brake pad samples is as a function of coefficient of friction and application number for final base line test Sample -A show fairly high coefficient of friction throughout the final base line test.

The coefficient of friction for Sample-A is stable even after a wear test conducted.

Initial Base Line Test for Sample –B

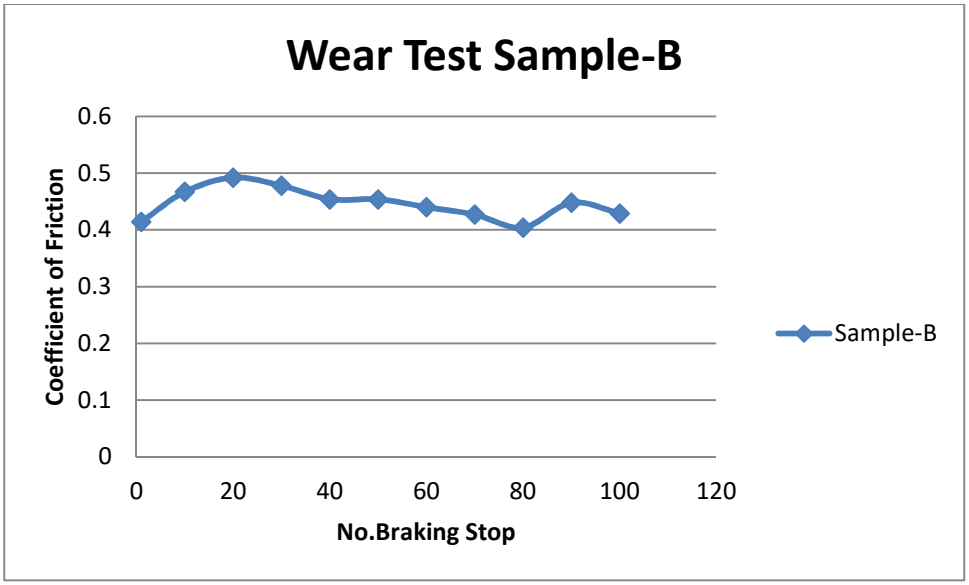
This test is important to match the profile of drum with Brake Pad In this test as per SAE procedure baseline-I operation is of 20 applications, where brake on for 10 second on and off in 20 second the μ is measured.



The μ of non asbestos disc brake pad samples 2 is as a function of coefficient of friction and application number for initial base line test SAMPLE-B show stable coefficient of friction.

Wear Test :

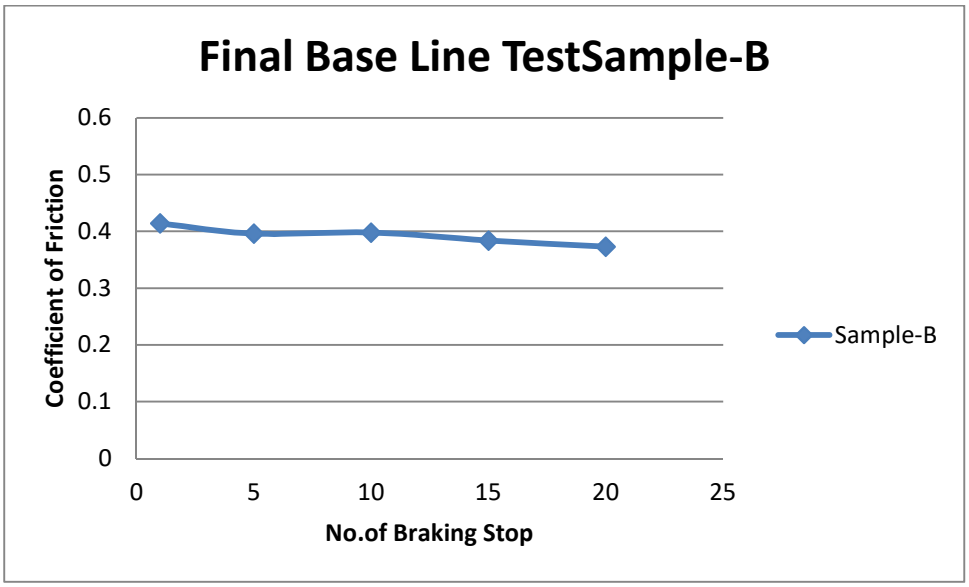
As per SAE procedure it consist of 100 applications , where brake is on for 20 s on and 10 s off. During this test the friction force readings taken.



for this test Sample-B provides excellent frictional stability during wear test at different application frictional force of SAMPLE-B is also lower than that SAMPLE-A this would be responsible for improved frictional stability.

Final Base Line Test

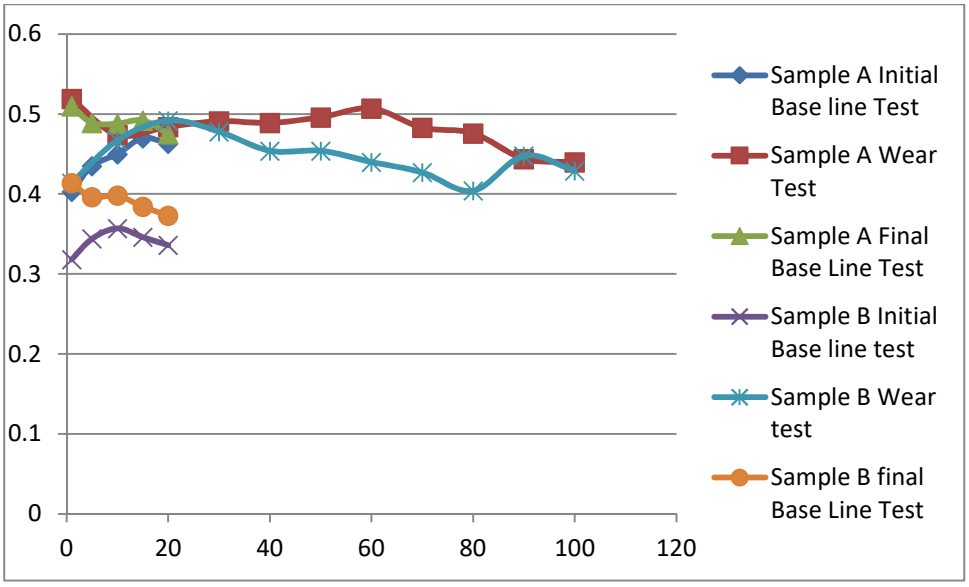
as per SAE procedure final baseline operation is of 20 applications, where brake on for 10 second on and off in 20 second.



The μ of Sample-B at final base line Show Stable Coefficient of Friction.

Comparison of InitialBase Line,Wear and Final Base Line test of Sample A With InitialBase Line,Wear and Final Base Line test of Sample B

Comparision of Initial Baseline,Wear,Final Base Line of Sample-A with Initial Baseline,Wear,Final Base Line of Sample B.



Sample A high coefficient of friction at start and then drop and them Stable.

Sample B high low high low in Cyclic Manner both the sample have stable coefficient of friction but sample A is best both the sample able to replace Asbestos Material

References

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Conditions of brake pad.