Toby Moore

Abex. FRICTION PRODUCTS

EDGE CODES

Myth vs. Reality

Since the mid-1960's, a standardized system has existed in the brakes industry to identify friction materials. Markings known as edge codes have been a significant aspect of this system.

An edge code is meaningful because it contains specific information about a brake lining, including a manufacturer's identification, a numeric code that references the lining type, and alpha characters that indicate the initial friction properties of the lining. The basis for determining the initial lining friction properties is established through SAE Standard Recommended Practice J866a.

Over the years, the true significance of edge codes has been inflated and distorted through misinformation being supplied to the assemblers, distributor, and users of friction products. As an example, some may have you believe that one friction material is of a better quality than another purely on the basis of the friction code (e.g. EE, FF, GG, etc.) This is simply not true. An edge code has nothing to do with product quality. Nor is it true that the edge code is indicative of stopping performance or wear.



The alpha characters representing the coefficient of friction only describe a range of normal and hot friction values measured when a 1" square piece of friction material is subjected to varying conditions of temperature, pressure, and rubbing speed on a test machine, better known as a Chase machine. The values referenced above are explained in a more detailed discussion of the SAE J866a procedure on the reverse side of this sheet.

Another myth about edge codes is that they relate to the hardness of a friction material, and that hardness plays a role in stopping performance. The reality of this notion is that an edge code has no relationship to the hardness of a part. Furthermore, a part's hardness is not an indicator of the stopping performance, nor the wear characteristics of the material. Stopping performance and wear attributes are the result of the raw materials and binder systems used in a friction material, as well as the manufacturing process applied in their forming and curing. None of these considerations are revealed through an edge code or a material's hardness.

The selection of a given friction material for a particular application cannot be adequately determined by edge code alone, but instead should be done by following the original equipment friction material (semi-metallic vs. organic) and identifying the appropriate aftermarket product engineered for that application.

While there are a number of methods to gauge the performance and durability qualities of a friction material, interpreting the edge code is not one of them. Alternatively, Abex recommends that industry accepted practices, as set forth by SAE or the original equipment manufacturers, be followed when evaluating friction material. These practices involve the use of inertia dynamometers and vehicles under controlled test conditions. If you have any questions about the friction materials that you are using, contact your Abex representative today! Abex has been a leader in the development and production of brake lining and assemblies for over 60 years. We have the knowledge and experience to solve your problems.

PLAINTIFF'S EXHIBIT NAPA 75

EDGE CODES

Friction Identification System for Brake Linings and Brake Blocks for Motor Vehicles – SAE J866a

SAE Recommended Practice

Report of Brake Committee approved March 1964 and last revised September 1966. Editorial change May 1967.

Scope – This SAE Recommended practice is intended to provide a uniform means of identification which may be used to describe the initial friction characteristics of brake linings and brake blocks for use on motor vehicles.

NOTE: It is emphasized that this recommended practice does not establish friction requirements for brake linings or brake blocks, nor does it designate other significant characteristics of brake linings or brake blocks which must also be considered in overall brake performance.

The basis for determining the friction coefficients for brake linings and brake blocks are tests in accordance with SAE J661.

Coding – The code will consist of two letters reflecting the friction coefficients as follows:

Code Letter	*Coefficient of Friction*
C	Not over 0.15
D	Over 0.15 but not over 0.25
E	Over 0.25 but not over 0.35
F	Over 0.35 but not over 0.45
G	Over 0.45 but not over 0.55
H	Over 0.55
Z	Underclassified

The first letter will represent normal friction coefficient and the second letter will represent hot friction coefficient.

Normal Friction Coefficient – Normal friction coefficient is defines as the average of 4 points on the second fade curve, located at 200, 250, 300, and 400 F.

Hot Friction Coefficient – Hot friction coefficient is defined as the average of 10 points located at 400 and 300 F on the first recovery; 450, 500, 550, 600, and 650 F on the second fade; and 500, 400 and 300 F on the second recovery.

NOTE: If any temperature point or points required to calculate friction coefficients are not reached in the prescribed time limit, the coefficient of friction value at 10 minutes shall be used to give the full number of points required.

EXAMPLE: A lining having a normal friction coefficient of 0.29 and a hot friction coefficient of 0.40 would be coded "EF".

Location of Code – The appropriate code designation will be marked on an external contacting surface in letters not less than 0.125 in. in height.

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