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## Mathis Technology Application: Testing Brake Pads

The sample size flexibility of the Mathis Technology makes it the only choice for brake pads. Thermal conductivity is a key parameter to be evaluated in this product, to design for optimum heat dissipation, bonding and homogeneity.

During the production of pads, bonding of the friction material to the backing occurs early on the line. If the bonding is not effective, it is cost effective to determine that before further work is done or a faulty pad is produced and sold. The Mathis Technology has the capabilities to detect bonding levels due to the difference in thermal conductivity if an air gap exists between the layers rather than a bond.

As braking occurs, heat builds up. If brake pad heat dissipation is improved, stresses within the pad will be reduced and service life will lengthen. The heat dissipation is related to the thermal conductivity and heat capacity of the material, both measured by the Mathis Technology. This improved service life would create an improved product and give a competitive edge to the manufacturer.

Finally, if the brake pads are produced with fillers, homogeneity of the final product may be a key factor in reducing weak points. Since the fillers usually have a different thermal conductivity than the base material, the Mathis Technology can be used to measure product consistency\*.

Currently, on the market there are several companies manufacturing thermal conductivity devices using the guarded hot plate technology described in ASTM D518. These instruments require samples that are a fixed dimension, starting at 6 inches square. If a product does not conform to that geometry, test samples must be 'mocked up' to be measured. Often the mock up parameters do not match those on the production line, yielding a sample that does not represent the end product.

The Mathis Technology technology is different. It is interfacial and can test any flat surface greater than 50 mm x 5 mm (2 in x \_ in) non-destructively. The tests are a minimum of 20 times faster than the guarded hot plate method. Tests times are as little as 5 seconds, where the fastest hot plate takes 10 minutes. The speed and absence of sample preparation stages gives the Mathis Technology the potential to be integrated on line\*\*.

The manufacturer is prepared to assist you in determining if there is a valid application for your company. This assistance can range from evaluating a few samples for you, to an out-sourced R&D project at our facility, to on site support and training at your location after an application is developed.

\* [see Mathis Technology Application: B2 - Testing Glass Filled Materials](#)

\*\* [see Mathis Technology Application: B5 - On-line SPC](#)