

FRICTION MATERIAL DEPOSITS

Friction material deposits are a common cause of steering wheel vibration when braking. This form of brake shudder is the result of intermittent grabbing and releasing of the brake pads on the disc rotor surface. Brake shudder due to friction material deposits is frequently mistaken for disc thickness variation (DTV) or the common industry term warped discs.

Friction material transfer is related to the organic elements component of the brake pad material. While an evenly deposited friction material transfer layer is a critical component of modern braking mechanics, it is when this layer becomes irregular in thickness that problems occur.

The irregular thickness of material deposits causes alternating, amplified torque levels in random locations around the braking surfaces. Out of sequence and random brake torque amplification will cause the steering wheel to vibrate back and forth, sometimes violently in extreme cases.

HOW DOES THIS OCCUR?

The most common cause of irregular friction material deposits is poor selection of the friction material and disc rotor combination for the intended application. All friction materials have a maximum operating temperature. When this temperature is exceeded, the material may begin to break down and release large deposits rather than the typical fine dust generated by braking friction.

For example: A typical commuter type **NAO** (Non Asbestos Organic) brake pad is intended for a low to medium torque application at low to moderate temperatures. Introduce a slotted or drilled disc rotor to increase torque for shorter stopping distances or for heavier vehicle loads and we increase temperatures.

When this brake pad material exceeds its intended temperature range, the excitation typically generated by slots or holes may drag decomposed or softened material from the pad, smearing it onto the rotor surface.

In most examples, you will see friction material deposits directly after a slot or hole.

The obvious solution is to pair performance pads with performance rotors (slotted or drilled) and general purpose pads with general purpose rotors (plain face).

With so many friction materials products available to choose from, it is sometimes difficult to distinguish performance marketing from actual performance products.

If a problem occurs and friction material deposits are present on your disc rotors this can be rectified if addressed early. For very light deposits, an upgraded brake pad material fitted often removes the deposits within a few days of normal driving. With more heavier deposits the friction material deposits can be removed by light sanding with emery paper or a very light skim on a brake resurfacing machine. The extreme worst-case scenario is when the material deposits generate heat spots in the disc rotor material which can happen if the issue is not address. These disc rotors must be discarded

