

**TABLE 2. INFLUENCE OF SOME BRAKE LINING PROPERTY
CHANGES ON BRAKE SYSTEM RESPONSE WITH
DESIGN MODIFICATIONS TO COMPENSATE**

	Change of Brake Lining Properties	Potential Response of Brake System	Needed Design Modifications
Friction Properties	• Lower Friction Coefficients - Front brakes - Rear brakes - Both front/rear	• Greater Pedal Forces Required, Leading to: - Early rear skid - Early front skid - Low brake capacity	• Larger Booster or Small Master Cyl. - Big front w.c. - Big rear w.c. - System redesign
	• Higher Friction Coefficients - Front brakes - Rear brakes - Both front/rear	• Lower Brake Pedal Force Required, Leading to: - Early front skid - Early rear skid - "Touchy" pedal	• Smaller Booster/Big Master Cyl. - Small front w.c. - Small rear w.c. - System redesign
	• Poor Fade Characteristics - Green fade - Thermal fade - Water fade - Flash fade	• High Brake Pedal Force Required For: - Initial hot brake - Any hot brake, - Wet brakes - High speed stops	• Recalibrate/Add Booster - Scorch linings - Modify linings - Shield brakes - Modify linings
	• Inconsistent Friction Level - Green linings - Usage history - Wear depth - Within batch - Batch-to-batch	• Varied Brake Pedal Forces Needed With: - New brake linings - Temperature change - Mileage driven - Brake imbalance - Car-car variations	• Change Linings/Redesign Brake - Modify linings - Modify linings - Modify linings - Improve process - QC improvement
	• Environmental Sensitivity - Water/water vapor, - Road dust - Oily contaminants - Oxide/rust effects	• Brake Pedal Force Sensitive to: - Humidity - Dust pickup - Road rain splash - Moist storage	• Change Linings/Redesign Brake - Modify linings - Shield brakes - Shield brakes - Materials change
Mechanical Properties	• Lower Compression Modulus	• Higher Brake Pedal Travel	• Redesign/Stiffen Actuation System
	• Higher Compression Modulus	• Noise and Uneven Effectiveness	• Reduce Shoe/Drum Stiffness
	• Higher Thermal Expansion/Growth	• Brake Dragging and Hot-Spotting	• Add Clearance or Thin Linings
	• Lower Tensile Strength	• Lining Fracture, Cast Iron Scoring	• Use More Rivets, Bond/Mold Linings
	• Lower Toughness	• Handling Breakage	• Alter Processes