Preliminary tests indicated the coating to be zinc oxide. Earlier laboratory bench and dynamometer tests have shown zinc to produce torque fluctuations above 510°F when zinc smears onto the cast iron, then oxidizes to provide a relatively durable and high friction local coating. The Bendix lining appears to have about half the zinc content of the Delco lining and also contains enough abrasive to remove any zinc oxide coatings. Thus it would be expected that the Delco lining should be more prone toward producing brake roughness. The problems sudden appearance after much prior vehicle testing probably was due to the accelerated form of the latest vehicle testing, the brakes being used repeatedly producing high temperatures before the linings seated fully. Our tests showed this exaggerates the roughness. Also the new corporate L-1 disc brake caliper assembly is much more rigid so more stops are required to achieve full seating and uniform lining pressure. Car Engineering was informed of our findings and has specified that the Bendix material be used until more vehicle evaluations are completed with seated linings.

Further reductions of brake roughness were required on the 1972 Thunderbird. Dynamometer tests of early production Kelsey-Hayes rotors showed permanent runout changes after a few brake applications. This was found to have been caused by high surface residual stresses (about 10,000 psi) from the final grinding operation. However, the runout itself did not cause the torque variations. The brake roughness resulting from the rotor appears to result from both the rotor thickness variation and its surface finish. It was found that a lathe turned rotor provides lower brake roughness and lower initial brake effectiveness, however, the latter corrects itself with use. Production rotors now are using a lathe turned finishing operation with low thickness variation limits (.0002" maximum rather than the previous .0005").

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