



Raybestos
The *best* in brakes

THE TRUTH ABOUT ROTOR TECHNOLOGY

RAYBESTOS® BRAND VS "LIGHTWEIGHT" ROTORS

WARNING! WARNING!

Our engineers recently discovered that "lightweight" rotors have reduced braking surface plate thickness. This results in an expanded air gap, reduced overall weight and limited heat dissipation characteristics of the rotor.

RAYBESTOS ROTOR VS COMPETITIVE "LIGHTWEIGHT" ROTOR

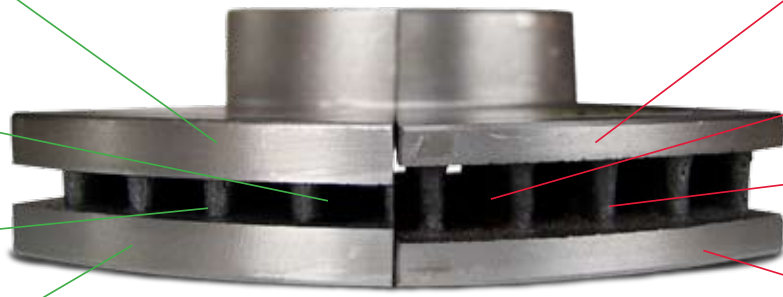


PLATE MATCHES ORIGINAL EQUIPMENT (OE)

Maximum rotor life; can be machined; resistant to premature "warping"

AIR GAP MATCHES OE

Properly dissipates and absorbs the heat

VANE SIZE MATCHES OE

Maximized cooling and proper harmonic design reduces brake noise

MATERIAL MATCHES OE SPECIFICATIONS

THINNER PLATE

Increases the likelihood of heat checking and can lead to premature failure

AIR GAP INCREASED

Leads to "warped" rotors

VANE SIZE CHANGES

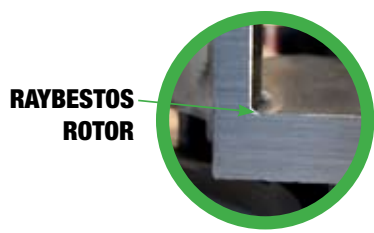
Reduced vane size can lead to early product failure

COST SAVING MATERIAL CHANGES

Inhibits noise reduction capabilities and causes brittleness

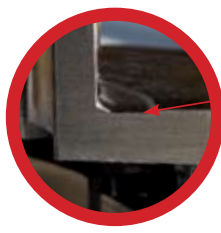
LESS MASS CHANGES A ROTORS HEAT RESISTANCE - THIS IS A PROBLEM!

HAT/PLATE INTERSECTION



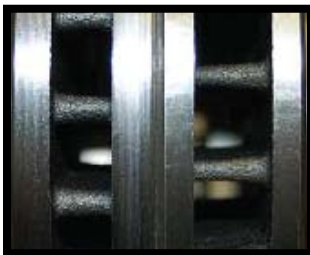
RAYBESTOS ROTOR

VS



COMPETITIVE "LIGHTWEIGHT" ROTOR

LATE GM MODEL



RAYBESTOS ROTOR

COMPETITIVE "LIGHTWEIGHT" ROTOR

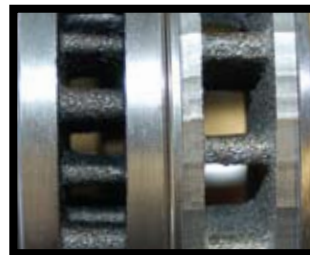
LATE MODEL GM



RAYBESTOS ROTOR

COMPETITIVE "LIGHTWEIGHT" ROTOR

LATE MODEL FORD



RAYBESTOS ROTOR

COMPETITIVE "LIGHTWEIGHT" ROTOR

LATE MODEL CHRYSLER



RAYBESTOS ROTOR

COMPETITIVE "LIGHTWEIGHT" ROTOR



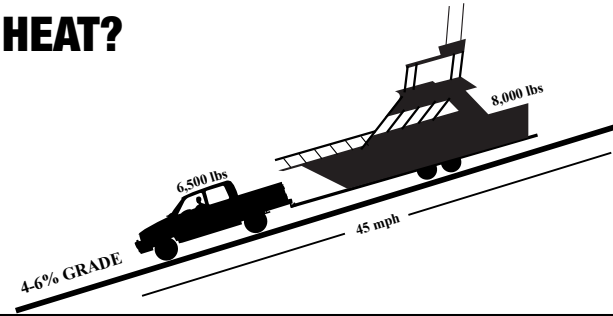
The diagram and chart below show the results of a downhill dynamometer simulation conducted at Affinia's Research and Development Center in Winchester, KY. The test simulated a half ton pickup with a GVW of 6500 pounds pulling a trailer weighing 8000 pounds. The brakes were used to maintain the vehicle's speed at 45 miles per hour as the vehicle traveled downhill on a 4 – 6% grade and then uphill continuously through a five minute cycle.

CAN YOUR ROTORS HANDLE THE HEAT?

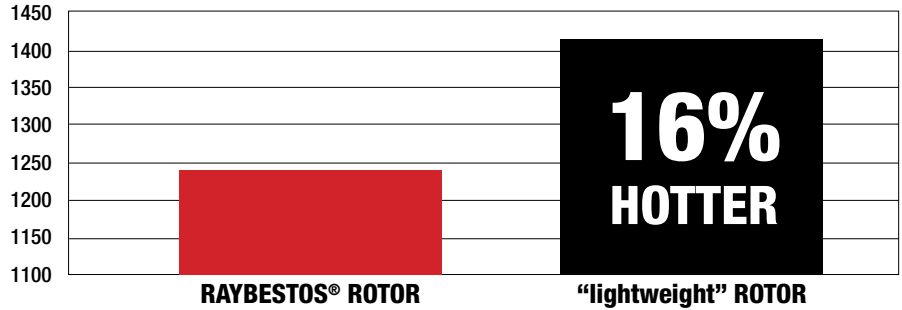
During testing, the "lightweight" rotor ran 16% hotter than the Raybestos® rotor. This resulted in increased brake fade, excessive lateral runout (warpage), pedal pulsation, uneven friction wear, material transfer and the extreme rotor cracking shown in the photo below.



Figure A



FINAL ROTOR TEMP (F) AFTER 5 MINUTE DRAG



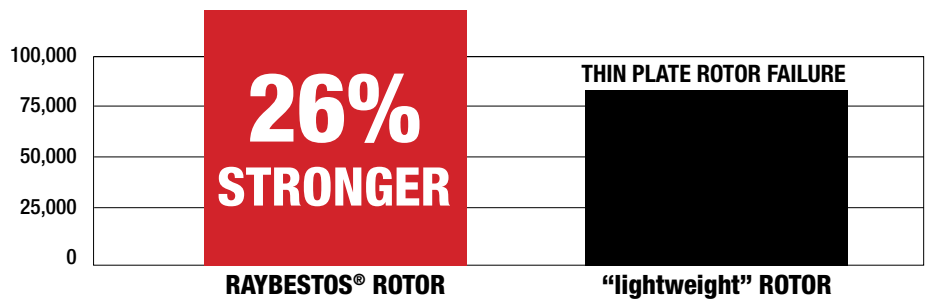
ARE YOUR ROTORS STRONG ENOUGH?

Raybestos® brand Product Engineers conducted a tensile strength test of the "lightweight" rotor to gauge overall structural integrity. This test proved that the "lightweight" rotor is 26% weaker than the Raybestos® rotor.

The picture below shows a cracked collar sustained during the tensile strength test. This resulted in a product failure.



TENSILE STRENGTH TEST IN lbs



THE CLAIM

Noisy brakes are caused by brake pads and hardware.

"lightweight" rotors run cooler.

THE TRUTH

Tests have proven that some "lightweight" rotors have reduced rotor mass between 7 - 24%. A reduction in overall mass could inhibit heat dissipation which can cause the material strength to weaken and potentially cause cracking. This can cause brake noise in addition to performance and possibly safety related issues.

Tests have proven that increased air gap, reduced vane size and thinner plate thickness changes the mass of the rotor and has a negative effect on its ability to conduct heat away from the brakes.