

ADVANCED TECHNOLOGY® • PROFESSIONAL GRADE® • SERVICE GRADE®

FRICTION

BEST STOPPING POWER, PEDAL FEEL AND NOISE CONTROL

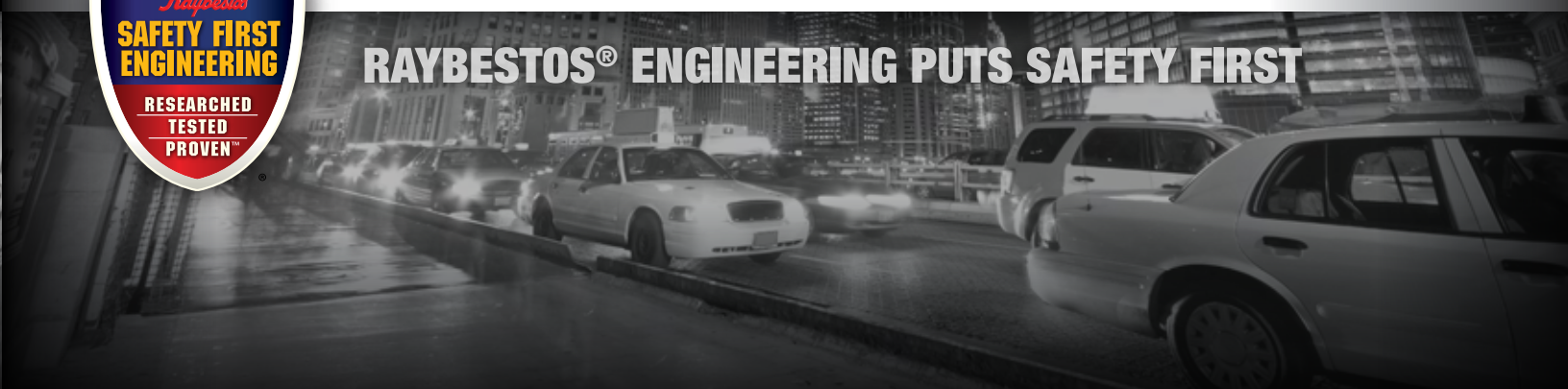


PADS • SHOES • HARDWARE

Raybestos
The best in brakes®



RAYBESTOS® ENGINEERING PUTS SAFETY FIRST



Raybestos
The best in brakes




BOOST CUSTOMER SATISFACTION WITH BETTER BRAKING PRODUCTS AND SERVICE

PRE-PURCHASE BENEFITS...

- **Research and Development:**
Strength and chemical testing, dynamometer testing, on-car performance testing and fleet testing ensure each new part maintains the safety and performance standards of the original equipment.
- **Design and Production:**
All friction goes through continued performance validation, raw materials testing and pilot production at the R&D Center in Winchester, Kentucky.
- **Dedicated Team Of Quality Engineers:**
Each material batch is continually audited and verified at each global manufacturing facility for hardness, sheer strength and specific gravity.
- **Global Business Strategy:**
This business approach combines four key elements: a customer centric focus, involved employees, continual improvement and building better supplier relationships.

POINT OF PURCHASE BENEFITS...

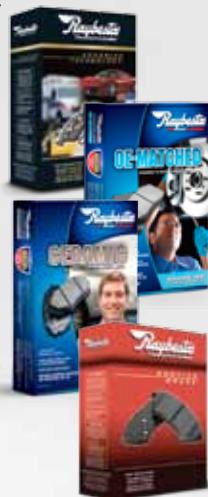
- **Expanded Coverage:**
Advanced Technology®, Professional Grade® and Service Grade® options are available for import and domestic cars, light trucks and SUVs.

- **First to Market Strategy:**
Being first to market makes you a leading expert in your local market and increases sales opportunities by giving you exclusive access to applications for the latest vehicles in operation (VIO).
- **Full Line Offering:**
We continue to dominate the Aftermarket with first to market part numbers and industry leading coverage for pads, shoes, hardware, sensors, dampers and drag reduction clips; always delivering the best design for the application.



POST-PURCHASE BENEFITS...

- **World Class Training:**
Accredited courses are conducted by NATEF certified instructors. Training Center and Field Training Courses reach more than 8,000 technicians annually.
- **Dedicated Technical Support:**
The Raybestos® ACE™ Tech Hotline answers more than 132,000 calls every year.
- **Raybestos Rewards™ Program:**
The FREE Raybestos Rewards loyalty program includes the E-learning program, FREE unlimited access to the Raybestos ACE Tech Hotline and an optimized selection of POS materials. You also receive automatic enrollment in the "Gimme a Reward" box top program.
- **Shop Cabinets and Raybestos Gear™:**
The shop cabinets bring added visual excitement to your shop and come filled with FREE brake and chassis product. Purchase Raybestos Gear from the online apparel store, or earn items free through the Raybestos Rewards program.

RAYBESTOS BRAND FRICTION SELECTION GUIDE



| | PERFECT FOR: | KEY DIFFERENTIATOR: |
|--------------------------------------|---|--|
| ADVANCED TECHNOLOGY | Severe duty, fleet, enthusiast, luxury and high performance applications | Ultimate Upgrade – Meets or exceeds OE expectations to deliver best in class performance, durability and noise suppression |
| PROFESSIONAL GRADE OE MATCHED | OE MATCHED – Everyday drivers looking for low noise, a smooth quiet ride and OE-level performance | Restores Factory Performance – Semi-met and NAO friction materials match OE; premium noise-dampening shims and OE-or-better slots and chamfers |
| PROFESSIONAL GRADE CERAMIC | CERAMIC – Everyday drivers looking for low dusting, quiet operation, improved pedal feel and enhanced responsiveness | Maximum Stopping Power & Safety – Ceramic friction materials match or improve on the OE ceramic formulation for strong and silent operation |
| SERVICE GRADE | Satisfying the coverage needs of older vehicles and budget-conscious customers | Value Responsive Coverage – The industry's most affordable quality line of friction with quiet operation and 95% coverage |

**FRICTION**

MAKE YOUR BEST BRAKE JOB LAST LONGER

**Advanced Technology®
Professional Grade®**

CRITICAL DESIGN FEATURES: OE or Better

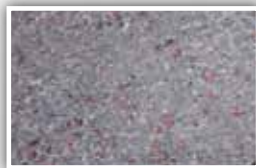
In all areas of design and production, Raybestos brand friction features shim, slot and chamfer configurations that meet or beat the OE standard for excellence.

Application Specific Friction Types

There are multiple formulations in production that are tested on more than 150 uniquely different platforms. These application specific solutions are like for like or better than OE; including those for heavy duty truck platforms.



Semi-metallic
Friction Formulation



Ceramic
Friction Formulation

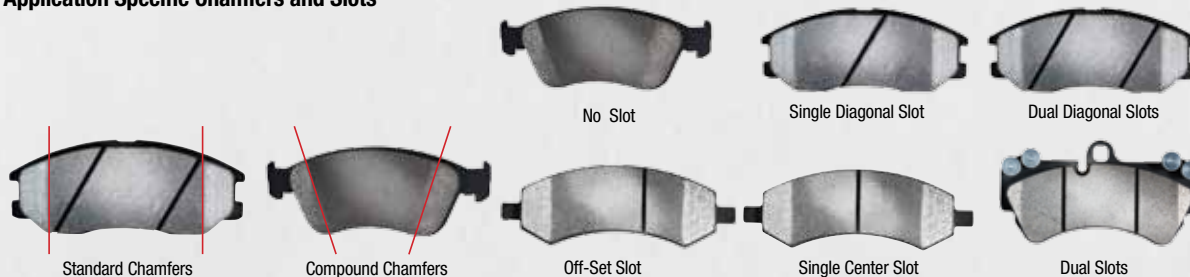
Applications Specific Mechanical Attachment

Mechanical attachments ensure the friction material can withstand increased shear force during severe braking situations; also helps prevent rust jacking. Typically used for HD applications and disc brake pads longer than 8 inches (and/or with steel plates 0.19" thick or less).

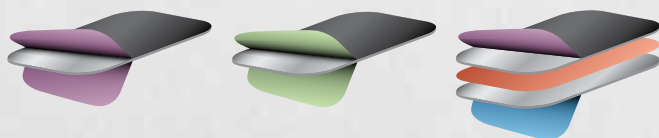


(Featuring NUCAP NRS® Technology)

Application Specific Chamfers and Slots



Application Specific Shim Material

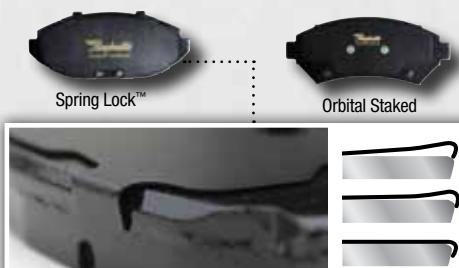


Standard Single Layer:
Protective Coating, Steel and Protective Coating

Premium Floating Shim Material:
Rubber, Steel and Rubber

Ultra Premium Constrained Layers:
Protective Coating, Steel, Nitro-rubber Core, Steel and Thermocast Adhesive

Shim Attachments

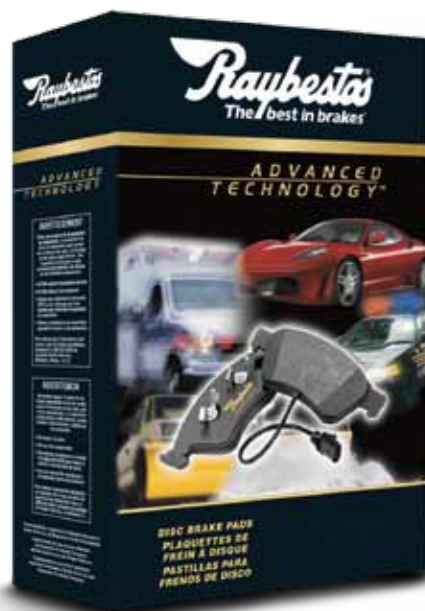


Application Specific Abutment Surfaces

On selected applications, steel with shaved ends is used to maintain a consistent flat surface at the points of contact between the brake pad and the caliper assembly. Tighter tolerances reduce the chance for noise and vibration; allows proper movement of the pad in the caliper assembly.



OE Specifications: 8.115"/8.121"
Raybestos: 8.118"
Competitor A: 8.143"



**MECHANICAL ATTACHMENT
FEATURING NUCAP NRS® TECHNOLOGY**
NUCAP NRS® Technology applied where required.

**SEMI-METALLIC
AND CERAMIC
FORMULATIONS**

ADVANCED TECHNOLOGY®

ADVANCED TECHNOLOGY DISC BRAKE PADS

Why we made this: Developed for demanding situations like severe duty, fleet, enthusiast, luxury and high performance. Top quality formulations deliver best in class performance and durability.

- **Application Specific Ceramic and Semi-metallic Formulations**
Cutting edge friction formulations defeat noise, dust and fade while delivering increased stopping power
- **Confident Pedal Feel From the First Stop**
All products are specially cured so they are ready to go right out of the box
- **Nitrile-Polymer Rubber Coated Hardware**
This upgrade is found only on Advanced Technology brake pads; maximizes noise suppression and service life over the conventional OE design
- **Integral Electronic Wear Sensor**
Perfect match to OE design; included where applicable
- **Stamped or Shaved Backing Plate**
Allows proper movement of the pad within the caliper assembly; closer tolerances reduce noise, premature wear and brake pulsation
- **Steel Plate Mechanical Attachment**
Unmatched sheer strength for light trucks (with a GVWR 10,000+) and all medium duty trucks; reduces edge lift and prevents rust jacking; found on disc brake pads longer than 8" or with steel plates less than 0.19" thick
- **Shims, Slots and Chamfers Match OE Design**
Reduce noise, vibration and harshness; facilitate temperature stability and the escape of brake gasses
- **Orbital Staked and Spring Lock™ Attached Shims**
Retains the shim in proper position for the life of the friction; premium application specific designs provide excellent NVH control

EXPERIENCE THE ULTIMATE UPGRADE PACKAGE

The search for the perfect brake pad is over. Raybestos Advanced Technology disc brake pads utilize top quality formulations to defeat noise, dust and brake fade while delivering increased stopping power. Enjoy confident pedal feel from the very first stop.



FRICTION

FORMULATED TO RESTORE LIKE-NEW PERFORMANCE



**MECHANICAL ATTACHMENT
FEATURING NUCAP NRS® TECHNOLOGY**
NUCAP NRS® Technology applied where required.

**SEMI-METALLIC
FORMULATIONS**

**PROFESSIONAL
GRADE®**

PROFESSIONAL GRADE CERAMIC AND OE-MATCHED DISC BRAKE PADS

Why we made this: Developed for everyday driving conditions... includes many problem solver applications; matches or improves on OE ceramic or semi-metallic friction formulation. Ceramic applications deliver responsive braking that's clean and silent. Semi-metallic applications provide quiet braking and strong bite for OE-matched braking power



- **Application Specific Ceramic Formulations**
Maximum stopping power and safety; silent braking, low dusting and improved pedal feel
- **Application Specific Semi-Metallic Formulations**
Restore factory performance for less noise and a smooth, quiet ride; exceptional fade resistance and durability
- **Improved Pedal Feel and Responsiveness**
All products are cured so they are ready to install right out of the box
- **Best Overall Coverage**
Professional Grade friction provides full coverage for import and domestic applications

- **Steel Plate Mechanical Attachment**
Unmatched sheer strength for light trucks (with a GVWR 10,000+) and all medium duty trucks; prevents rust jacking; found on disc brake pads longer than 8" or with steel plates less than 0.19" thick
- **Stamped or Shaved Backing Plate**
Allows proper movement of the pad within the caliper assembly; closer tolerances reduce noise, premature wear and brake pulsation



ENGINEERED TO RESTORE FACTORY PERFORMANCE

Raybestos Professional Grade OE-Matched friction materials match the original formulation for less noise and a smooth quiet ride. The semi-metallic material is enhanced by premium noise-dampening shims and OE-or-better slots and chamfers.



**MECHANICAL ATTACHMENT
FEATURING NUCAP NRS® TECHNOLOGY**
NUCAP NRS® Technology applied where required.

**CERAMIC
FORMULATIONS**

- **Necessary Hardware Included**

Abutment hardware is extensively used with abutment clip designs to maximize noise suppression and service life; all other hardware is included where required, and extensive coverage of loose hardware is also available

- **Application Specific Abutment Surfaces**

Consistent flat surface at the points of contact between the brake pad and caliper assembly; tighter tolerances reduce noise

ACHIEVE MAXIMUM STOPPING POWER AND SAFETY

Raybestos Professional Grade Ceramic friction materials match or improve on the OE ceramic formulation for operation that's clean, quiet and smooth. The ceramic material is low-dusting, strong and silent; delivers improved pedal feel and enhanced responsiveness.

- **Premium Attached Shims**

Unrivaled noise dampening and durability

- **Slots and Chamfers Match OE Design**

Reduce noise, vibration and harshness; allow braking gasses to escape

- **Orbital Staked and Spring Lock™ Attachment**

Shims stay in place for the service life of the friction

- **Integrated Electronic Wear Sensors**

Included where required; loose electronic wear sensors are available separately

PROFESSIONAL GRADE BRAKE SHOES

Why we made this: A full coverage program (including parking brake shoes) that also delivers industry leading category coverage to trucks, police, taxi and fleet-type vehicles that require severe duty performance. Designed to work with front brake pads to provide even, balanced braking. Delivers OE or better quality for extra long service life.

- **Highest Shear Strength**

Provides highest possible bond integrity

- **Contour or Cam Ground**

Ensures the best contact between shoe and drum

- **Premium New Steel**

Facilitates correct shoe to drum contact for best performance

- **Application Specific Materials for Best Performance and Service Life**

Developed to deliver exceptional performance for everyday driving conditions; designed to provide stable and balanced braking

- **Riveted or Bonded**

Delivers the highest possible shear strength; reduces noise and vibration

- **OE Matched Levers and Hardware**

All required levers and hardware included for an easy and complete installation

- **Premium Dipped Coating**

Provides corrosion resistance for superior durability



FRICTION

VALUE AND COVERAGE



SEMI-METALLIC
AND CERAMIC
FORMULATIONS

**SERVICE
GRADE®**

SERVICE GRADE DISC BRAKE PADS

Why we made this: Developed to satisfy the coverage needs of older vehicles and budget-conscious customers. Delivers quiet operation and safe, reliable performance for everyday driving conditions.

- **Ceramic, Semi-metallic and NAO Formulations**

Provides the quiet, safe and reliable operation you expect from Raybestos brand friction

- **Shims, Slots and Chamfers**

Help diminish noise, vibration and harshness

- **Integrated Electronic Wear Sensors**

Perfect match to OE design; included where applicable

- **Broad Coverage**

95% coverage; first to market on select applications

- **Best Value**

The industry's most affordable quality line of friction

VALUE RESPONSIVE COVERAGE

Raybestos Service Grade friction provides an affordable, quality line of friction that satisfies the coverage needs of older vehicles and budget-conscious customers.



SERVICE GRADE BRAKE SHOES

Why we made this: Developed to satisfy the coverage needs of older vehicles and budget-conscious customers. Delivers safe and reliable performance for everyday driving conditions.

- **Broad Coverage**

95% coverage; first to market on select applications

- **Best Value**

The industry's most affordable quality line of friction

- **Fleet Tested**

Ensures safe operation and sufficient durability

Professional Grade®

NOISE REDUCTION AND SENSORS



BOXED HARDWARE

Why we made this: Delivers everything you need for a complete brake repair, including: caliper anti-rattle clips, seals, pins, dust boots, drum shoe return springs, hold down springs, adjuster assemblies, disc brake hardware axle kits, combi kits and self adjusting kits

- **OE Matched Performance**
Meet all OE standards to restore braking system to like-new condition
- **Design Specifications Match OE**
To assist in returning the braking system to its original braking performance
- **Full Selection of Parts**
Includes more than 3,800 parts for disc brakes, drums and anti-lock braking systems (ABS); Raybestos parts are available in complete kits or as individual components



ELECTRONIC WEAR SENSORS

Why we made this: Protects drivers by signaling the urgent need for brake system maintenance. Usually found on high-end European vehicles, but now becoming popular on a wider range of vehicles.

- **OE Matched Performance**
Meet all OE standards for form, fit and function for flawless operation
- **Design Specifications Match OE**
Delivers OE form, fit and function
- **Full Selection of Parts**
Includes more than 140 part numbers for disc brakes, drums and anti-lock braking systems (ABS). Raybestos parts are available in complete kits or as individual components

DRAG REDUCTION CLIPS

Why we made this: Developed to reduce brake drag in problem applications. Delivers extended pad life and increased gas mileage.



- **Quick, Easy Way to Reduce Brake Drag**
Better fuel economy, reduced brake wear, less brake noise and lower braking temperatures

- **Designed for an Easy Fit**
Fit over the pad steel on applications where the clip was not originally part of the original equipment
- **Boost Braking Performance and Shop Profitability**
Low cost items that offer a high return; reduced noise and reduced rolling resistance for better mileage



DRAG
REDUCTION
CLIPS

- **Retrofit Progressive OE Hardware Designs**
Now available for a wide range of vehicles



DRAG REDUCTION CLIPS
The springs provide positive pressure... keeping the friction separated from the braking surface when the brakes are not applied. This applied pressure is light enough that it has no effect on the braking system when the brakes are re-applied.

DAMPERS

Why we made this: Developed to dampen out low frequency groan noise in problem applications. Delivers an energy absorbing compound that eliminates low frequency vibration in the 0-2000Hz range.



- **Quick, Easy Way to Reduce Low Frequency Noise**
Installs in less than 90 seconds; suppresses low frequency brake noise for years
- **Absorbs Sound and Energy**
Suppresses low frequency moans, groans and squeals from rear caliper; this noise cannot be canceled out with a typical shim, which is designed to cancel higher frequency noise
- **Designed for an Easy Fit**
Attaches to the caliper using an LFD lock bolt (which replaces the existing caliper lock bolt)
- **Progressive Design Fits Many Problem OE Platforms**
Now available for a wide range of vehicles

**FRICTION**

FLEET SOLUTION FRICTION

**PROFESSIONAL GRADE
COMMERCIAL BRAKE SHOE**

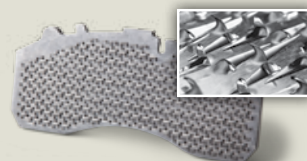
**PROFESSIONAL GRADE
COMMERCIAL DISC BRAKE PAD**

**ADVANCED TECHNOLOGY
COMMERCIAL AIR DISC BRAKE PAD**

**ADVANCED TECHNOLOGY
COMMERCIAL DISC BRAKE PAD**

MECHANICAL ATTACHMENT FEATURING NUCAP NRS® TECHNOLOGY
Ensures friction material stays attached to backing plate during severe high temperature/stop-and-go usage. It prevents rust jacking of friction in northern climates using magnesium chloride deicing solutions.

NUCAP NRS® Technology applied when required by OE.



RAYBESTOS MEDIUM DUTY FRICTION MAXIMIZES THE USEFUL LIFE OF YOUR FLEET

Developed for demanding situations and hardworking medium duty hydraulic, air disc trucks and fleet type vehicles. Delivers OE or better quality, best in class performance and maximized durability; first to market availability and industry leading category coverage.

- Disc brake pads utilize application specific semi-metallic formulations (and some ceramic formulations) for exceptional wear characteristics, premium performance and quiet operation in severe duty driving situations; exceptional cost per mile value
- Disc brake pads meet industry and government safety qualifications
- All products are extensively tested; disc brake pads meet industry and government safety qualifications; conform to government guidelines based on SAE testing

- Air disc brake pads accommodate shorter stopping distances required by current FMVSS 121 regulatory standards for Class 8 vehicles
- For all pads... shims, slots and chamfers match the OE design to reduce noise, vibration and harshness; allow braking gasses to escape
- HD brake shoes are application specific for best performance and service life; highest shear strength for maximum bond integrity; recoiled for proper drum to shoe contact; OE matched levers and hardware for an easy and complete installation

Check commercial brochure for more information.



RAYBESTOS POLICE FRICTION IS POLICE AGENCY TESTED TO EXCEED YOUR EXPECTATIONS

The National Institute of Justice (NIJ) and the Michigan State Police have evaluated Aftermarket disc brake pads for police duty. Testing confirms that Raybestos Advanced Technology police disc brake pads perform better and last longer than most leading competitors. Dynamometer testing and on-track evaluation ensure optimal stopping power, temperature stability and noise-free braking.



- Application specific semi-metallic formulations (and some ceramic formulations) developed specifically for Police applications; minimal noise, wheel dusting and brake fade
- Confident pedal feel from the first stop; all products are cured so they are ready to go right out of the box
- Steel plate mechanical attachment delivers unmatched sheer strength for Police applications; prevents rust jacking
- Nitrile-polymer Coated Quiet Clips™ maximize noise suppression and service life
- Special applications for special service and pursuit vehicles; selected applications are D3EA and PPSV approved

Check police brochure for more information.

THE RAYBESTOS® BRAKES COMMITMENT TO QUALITY

Raybestos Professional Grade® and Advanced Technology® friction is consistently manufactured to meet OE quality standards and ISO/TS certification requirements. Global engineering expertise ensures that all testing requirements are consistently enforced; confirming the friction material maintains the same stopping power, service life and safety as the original equipment counterpart.

ISO/TS16949-2002 Accreditation

- All Raybestos friction manufacturing facilities have earned ISO/TS16949-2002 Accreditation.
- This certification for quality validation and manufacturing superiority is required of every company who supplies an OE manufacturer.

Systematic and Diagnostic Testing

- **Physical and Chemical Testing** – Tests the strength and chemical properties of the material to ensure they can handle the stresses of a severe or sudden braking situation
- **Dynamometer Testing** – Tests for performance, noise and wear at infinite pressure, temperature and noise frequency levels; verifies the proper combination of front and rear braking for a complete vehicle system
- **On Car Performance Testing** – Measures critical variables to evaluate performance, noise and wear; anti-lock brake systems and individual brakes can be switched on and off to measure the effect on safety in the event of related system failures
- **Fleet Testing** – Several fleets around the country are used to measure real-world performance in severe environments; new formulations typically have more than one million miles of fleet testing before achieving production approval

Every formulation from every manufacturing facility is audited monthly and subjected to additional quarterly testing to ensure that every Raybestos brake pad performs consistently and as expected. Each friction formula mix must pass three specific tests before production release:

- **Gogan Hardness Test** – Measures compressibility and must fall into a narrow range specific for each formulation
- **Shear Test** – Measures the strength of the bond between the steel backing plate and the friction material
- **Density Test** – Measures the weight and volume of the formula mix and ensures adherence to the material specifications



Raybestos®
The best in brakes®

RAYBESTOS® ENGINEERING PUTS SAFETY FIRST

- RIGOROUSLY RESEARCHED
- EXTENSIVELY TESTED
- FLEET PROVEN



Discover other performance brakes, pads, rotors on our website.