



**THINK  
BRAKES**



**BRAKE SHOES FOR TRAINS &  
BRAKE PADS FOR SUBWAYS TRAINS**

# TECHNOLOGY ON RAILS

Fras-le has earned international recognition in over a half-century of operations with a history marked by technological advances, innovation, and a pioneering approach. It is the largest company in Latin America and one of the leading global manufacturers of friction materials, producing brake linings, brake pads, brake shoes, clutch facings, and attending industrial needs with molded and woven linings and universal flat sheets.

**There are over 14,000 items available for heavy and light vehicles, subways, railways, aircraft, motorcycles, and industrial applications**

With factories in Brazil, Argentina, United States of America, China, Uruguay, and India; distribution centers in Argentina, Germany, and Colombia, and commercial offices in the United States, Chile, and

Mexico, the company has a commercial and technical team that serves customers in more than 100 countries across the five continents. Significant investments in technology ensure the reliability and quality of products, which are developed and tested by a team of professionals at Fras-le's Research and Development Center, one of the best equipped in the world.

To create synergy between all of its processes, Fras-le has also access to the CTR, a technology Center with proving grounds and a structural laboratory that simulate vehicles' real-use conditions.

Fras-le's experience in auto parts manufacturing was decisive to the investments in the rail sector. Thus, the company develops quality brake shoes for railway trains and brake pads for subway trains avoiding the use of materials that are harmful to the environment.

## R&D CENTER

Fras-le's best feature in the development of brake shoes for railway trains consists of the use of an inertia dynamometer, the only one owned by a private company in Brazil. It allows tests to be conducted by international standards (such as the AAR - Association of American Railroads) and offers the following advantages:

- // Performs tests in real scale 1:1, simulating real conditions of brake shoes and brake pads applications.
- // Independent and fast development of new friction materials for trains.

// Repeatability ensures more efficient results and more durable products.

The laboratories at Fras-le's Research and Development Center, along with the use of the dynamometer, allow the execution of performance, durability, wheel damage, static torque, and sound and odor verification tests. With this advantage, the company is gaining total independence by checking the behavior of friction materials for trains.



# BRAKE SHOES FOR SUBWAYS

With an asbestos-free formula and no damage to the wheel, Fras-le brake shoes are approved by the main cargo and passenger transport operators in Brazil, attending two segments:

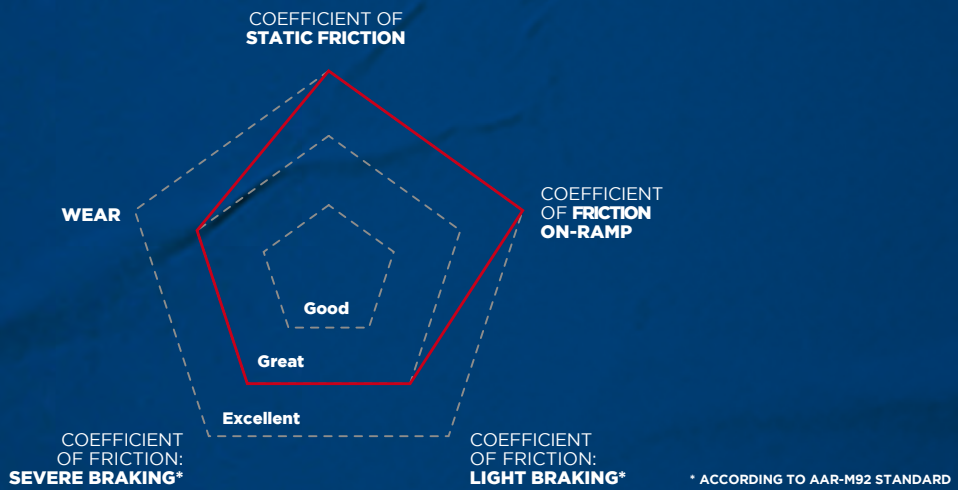


## PASSENGER TRAINS

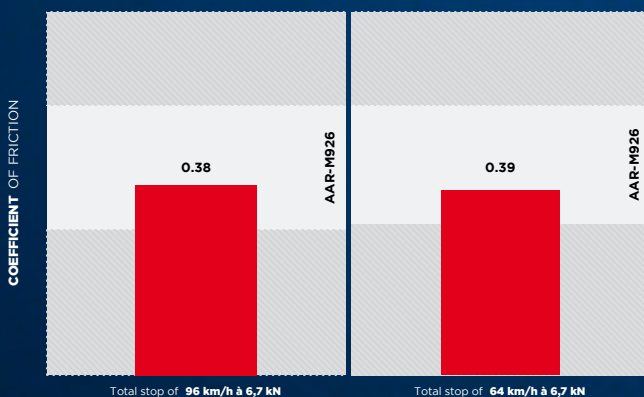
The brake shoes are developed to reduce noises, ensuring accurate and secure stops at stations, independently, of weather and load conditions, guaranteeing users comfort.

## FREIGHT TRAINS

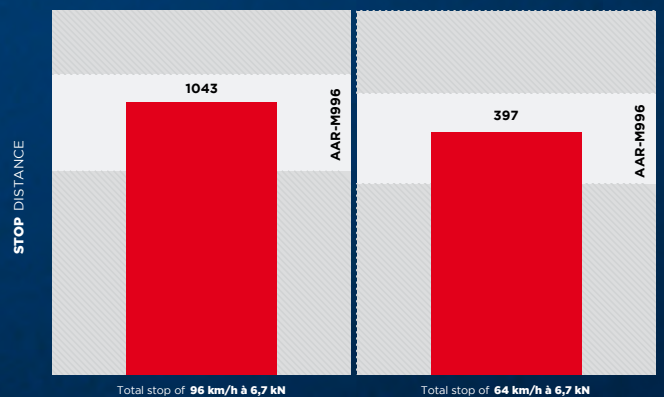
The brake shoes are projected to be highly durable without damaging the undercarriage. Furthermore, they offer an excellent cost/benefit ratio and meet each customer's specific requirements.



### BRAKE SHOES HIGH FRICTION



### BRAKE SHOES LOW FRICTION





Locomotive

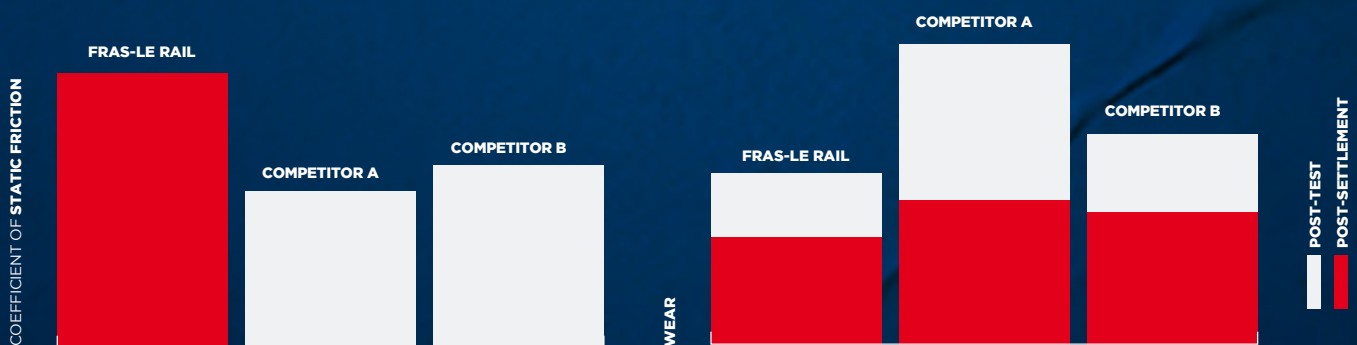


Wagon



## HIGH-PERFORMANCE FRICTION MATERIAL

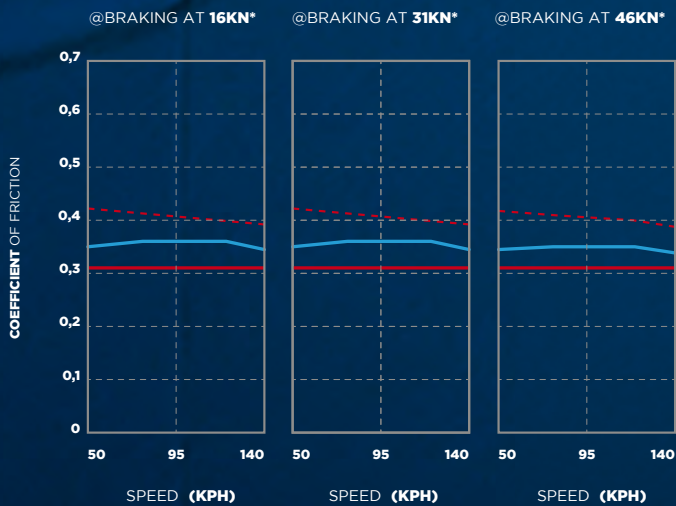
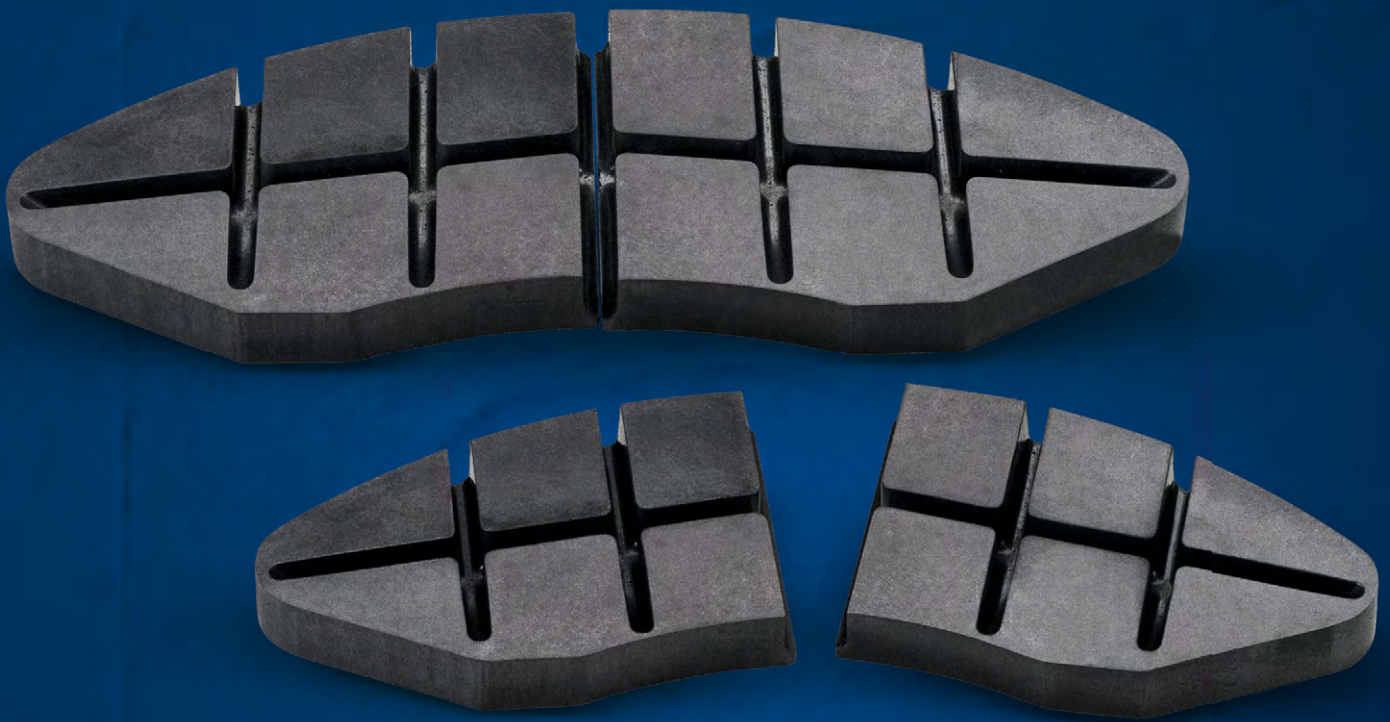
- // Disruptive raw materials replacing the regular petrol-based ones.
- // Sustainable production process with reduced carbon footprint.;
- // Friction coefficient stability
- // Less wear during operation.
- // High-performance and durability for applications of wagons and locomotives.
- // Wear indicators present in all applications and geometries.



# BRAKE PADS FOR SUBWAYS

Our brake pads have been approved by Brazilian subway train companies since the beginning of the 80s. By Fras-le's environmental-friendly approach,

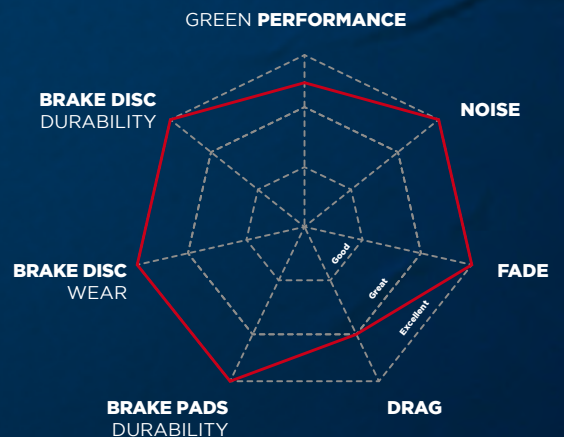
they are developed with asbestos-free materials, ensuring the efficiency necessary for safe stops, according to UIC Standard.



**CAPTION:**

- RESULT
- MINIMUM
- - - MAXIMUM

\*ACCORDING TO UIC STANDARD 541-3

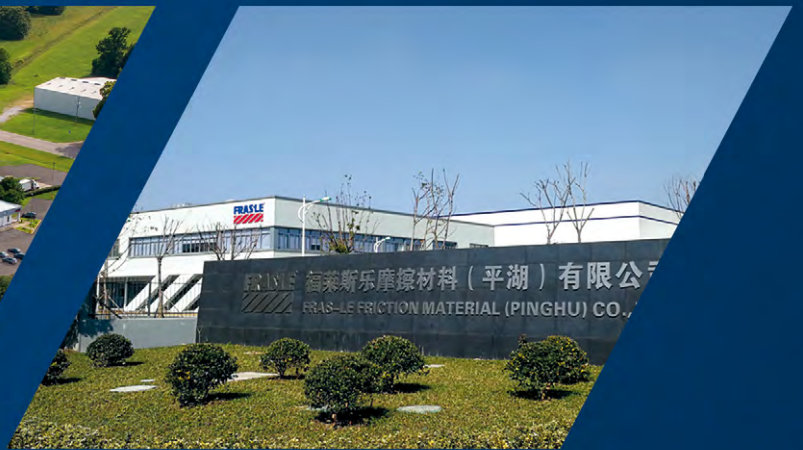




**Fras-le S.A** // Caxias do Sul // Brazil



**Fras-le North America** // Prattville // United States



**Fras-le Asia** // Pinghu // China



[www.fras-le.com](http://www.fras-le.com)