

## Fras-le Technology, Constant Evolution

Meeting competition worldwide requires for constant investments focused on the development of new technologies and processes. Because of the characteristics of the friction material market, technological update is a crucial element for Fras-le.

Fras-le's goal is to reach the top position as a world leader in this market, and that requires strategic investments in technological training, environmental management and quality. An important step towards this was the construction of the Research and Development Center in the Forqueta plant, concentrating and searching for larger synergy of activities concerning Research and Development. The Industrial Area has been making significant investments on more accurate and more productive equipment.

## Research and Development Center

The Research and Development Center is coordinated by two systems: the Engineering, Research and Product Development System and the Engineering and Applications System, and each system carries out its activities with the following purposes:

### Engineering, Research and Product Development

It develops technologically updated products that offer customers the best final cost and performance, reducing time and optimizing the use of resources available for the development of the project.

### Pilot Lab

This lab houses a pilot factory. It enables experiences with new formulations, new processes and new raw materials to be carried out, aiming at cost reductions in the variations of the characteristics of the products and the standardization of processes.

## Engineering and Applications System

This system evaluates and proposes the correct application for the product, working side by side with national and international customers, analyzing the service conditions of the brake assembly, as well as the characteristics of friction materials for brakes and clutches, using resources available in the Physical Lab, tests in vehicles, third-party resources, with the purpose of meeting legislation and customers' requirements and needs. It accompanies and coordinates the activities regarding the application of the product, quality warranty of products of normal production, analysis of field problems, validation of the product, as well as the evaluation of products in the market.

The contact with customers allows a better identification of their needs and evaluations are discussed and shared in the sense of using the most cost-effective viable solution, enabling a task of simultaneous engineering to be performed.



Physical Lab

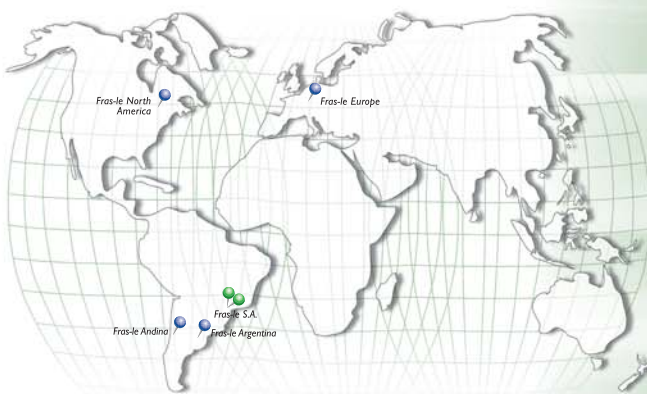


Pilot Lab

### Physical Lab

The Physical Lab analyzes the physical and mechanical characteristics as well as the performance of friction material for brakes and clutches. This means performing tests in proof bodies at a reduced scale, inertial tests in brake systems by simulating all service conditions at the lab, and even performing field tests on vehicles under normal and severe conditions of use, carrying out tasks for the development of the product, working for the quality assurance of products of normal production, analyzing field problems and assessing products that already exist in the market.

This laboratorial work simulates (in reduced time) the use of the product in field conditions, assuring a perfect operation of the equipment already existent and allowing the company to adapt evaluations to meet specific purposes.



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Safety in Motion Control



**LonaFlex**

## Worldwide Quality

Founded on February 22, 1954, Fras-le has been in the national and international market for 49 years, supplying the most complete product range in friction materials. Its product line has more than nine thousand items, such as brake pads and linings for light and heavy vehicles, brake shoes and pads for motorcycles, clutch facings, brake shoes for railway vehicles and special products to be applied to machines, tractors, elevators, oil field draw-works, etc.

Since its very beginning, Fras-le has been aiming to establish a solid base, once its products are safety items of vehicles.

Technological agreements with research institutes and universities, both in Brazil and abroad, support Fras-le's globalized projects. The company was one of the first in the State of Rio Grande do Sul to sign the commitment

term to the Gaucho Program for Quality and Productivity (PGQP), for which it received the "Silver Trophy for Leadership and Process - Progress" in 2002. It was the first friction material manufacturer in Brazil to obtain the ISO 9001 certification. Fras-le also has been granted the QS 9000 certification - standard that guarantees and assures quality for supplying the OEM market.

In 1999, upon completion of its Total Quality Program, Fras-le received the ISO 14001 Certification, which - through a System of Environmental Management and Policy - identifies and minimizes the aspects and impacts that its activities may cause to nature. Fras-le also tries to comply with all pertinent and applicable environmental regulations.



Caxias do Sul - RS - Brasil

## Mission:

To create value to shareholders, customers and end-users through the manufacturing of quality friction products.

## Values and Principles:

- Customer: Comes first
- Quality: Everyone's commitment
- Technology: Creative and innovative
- The human being: Valued and respected
- Ethics: A matter of confidence
- Image: A heritage to preserve
- Fras-le: Is all of Us

Business:  
Safety in Motion Control



Fras-le's friction materials are asbestos-free in 100% of Brazilian OEM's heavy and semi-heavy vehicles, meeting legal and specific requirements of the applications and markets for which they are destined to.



## Heavy Linings

Hydraulic and pneumatic brake linings type S and Z cam are applicable to equip either freight or passenger cars, such as trucks, buses, trailers and semi-trailers, SUVs, vans, etc. Besides the national market, products are exported to about 70 countries.



## Light Linings

Hydraulic brake linings, which can equip passenger cars and SUVs.



## Disc Brake Pads

Hydraulic and pneumatic brake pads equip automotive vehicles from passenger cars to trailer-trucks.



## Clutch Facings

Woven clutch facings that can be used in automotive vehicles such as passenger cars, vans, SUVs, buses, trucks, and tractors.

Fras-le offers specific facings for vehicles that operate in extra-heavy services, called HD (Heavy-Duty) quality. Another line of facings is comprised of asbestos-free molded products to be used in agricultural machines.



## Motorcycle Brake Shoes and Pads

Motorcycle brake shoes and pads for Disc or Drum Brakes.



## Molded and Woven Brake Linings in Rolls

They are basically designed for industrial brakes which request a curved brakeage surface. Woven brake linings are supplied in rolls or sheets that are 4.8mm to 19mm thick and 1.5 to 13" wide. Traveling cranes, tow trucks, oil field draw-works, mining equipment and elevators are examples of applications. Molded linings are supplied 4 to 11-mm thick and 2 to 6 inches wide. Besides industrial applications, molded linings are also used in automobile's brakes.



## Brake Pads and Shoes for Railway and Subway Compounds

Brake shoes for freight and passenger trains, and subway compounds.



## Universal Flat Sheets

Universal flat sheets are used in industrial brakes of machines and equipment used to transport loads which request flat brakeage tracks.