

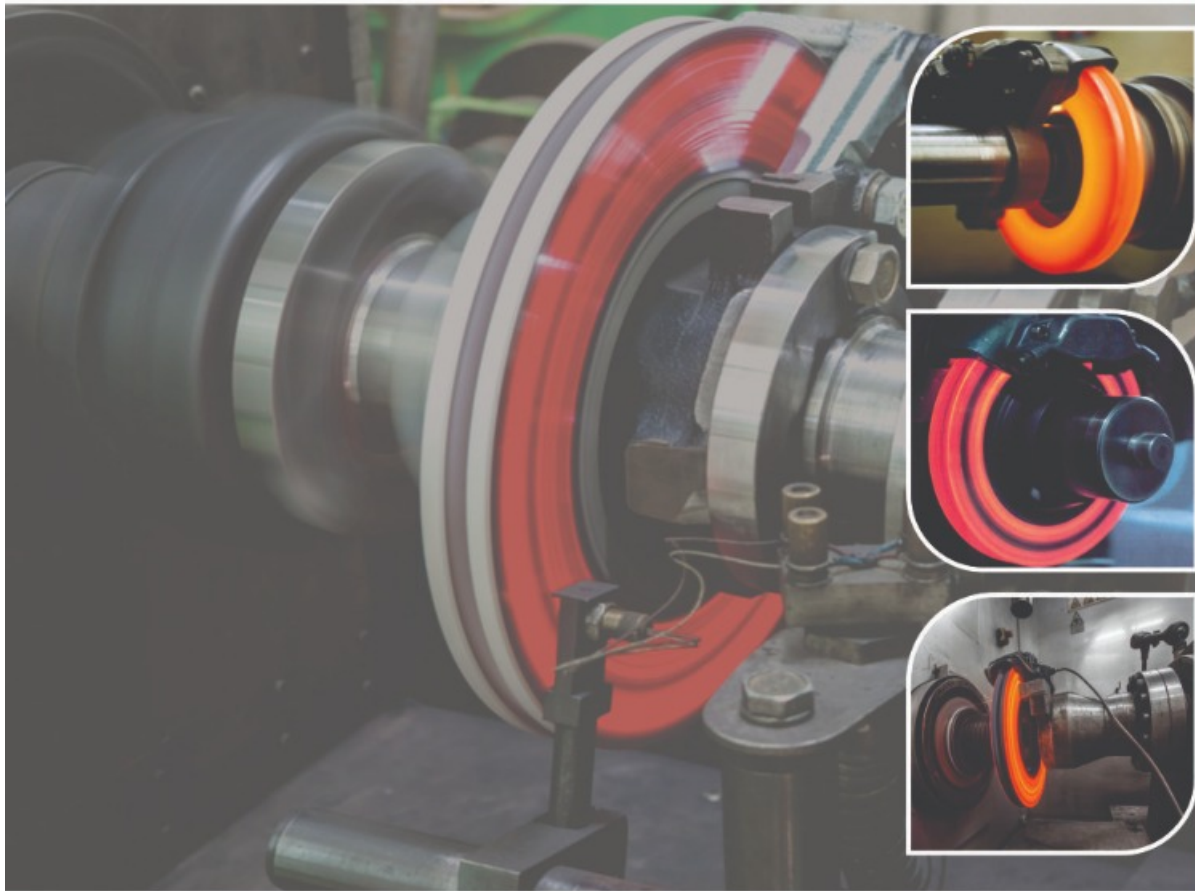
FRICMART[®]

INDIAN FRICTION MATERIAL ENGG. CO.

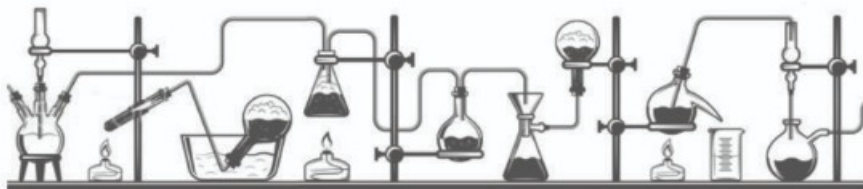
Automotive

Brake Testing

Laboratory & Tribology Solutions



**For Brake Pads, Brake Shoes
Clutch Facings & Sintered Friction Materials**



ABOUT US

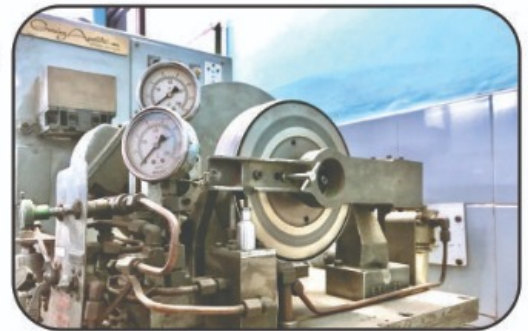
Brake Industry is one of the fastest growing Auto Component sectors in India and so the demand for reliable quality Friction Materials viz, Brake Linings , Brake shoes, Brake Pads for Motor cycles to cars and commercial vehicles have been witnessing many fold increase in domestic and export markets as well. Malfunctioning of these critical parts not only endanger safety of lives and properties but also challenge a company's very existence in the business. Unlike in the West / EU / SA / GCC countries , India yet to formulate legislative / technical / safety & health requirements for Friction Materials being used in the after - market. But of late, it became mandatory for Indian exporters to comply above standards (E` mark / Edge code etc.) of importing countries and Fricmart provide them with complete testing and technical solutions to meet the standard requirements.

Fricmart™ is a team of Technocrat - Entrepreneurs with decades of experience in Design Manufacturing, R & D and Testing of Friction Materials and one of the leading Technical know-how providers in the field of Friction Materials viz Brake Liners , Brake pads , Brake Shoes used in Automotives, Industrial /off high ways and Railways. **Fricmart** have many clients in domestic and international markets. The Lab is recognized as a neutral, 3 rd party and referral test lab by reputed manufacturers of Friction Materials, Brake system and Vehicle OEMs ; Homologation Labs , Indian Railways, Defence , Universities , Academicians and Research scholars from India and abroad.

TEST FACILITIES

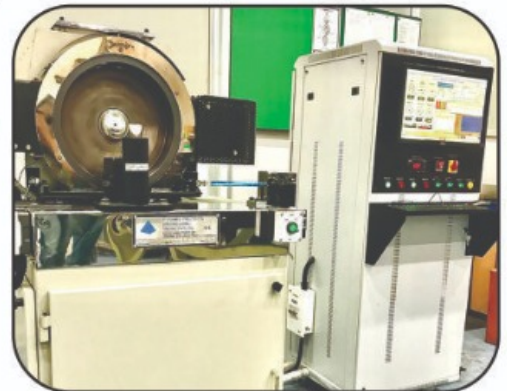
FAST

- ▶ Friction Assessment and Screening Test (FAST) Machine uses small , flat test specimen of 0.50 sq. inch , with a solid disc / rotor.
- ▶ Operates in either constant clamping force or friction force under constant rubbing speed of about 7 mtr./sec can Measure.
- ▶ Dynamic Friction vs. Load vs. Temp.
- ▶ Static Friction • Residual Drag • Indication of squeal.
- ▶ Important QA / R & D tool used for initial screening of specimens of Brake linings, Pads, Clutch facings etc.



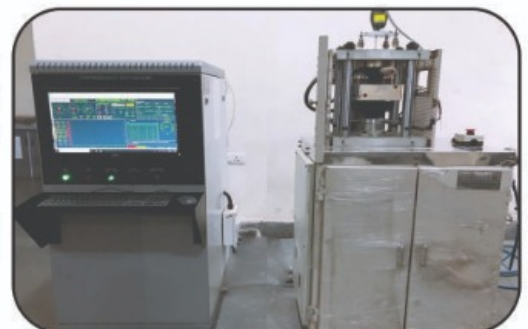
CHASE

- ▶ CHASE Friction Material Testing machine uses small radiused test specimen of 1.0 sq. inch and a dedicated brake drum as per SAE specifications.
- ▶ Designed to operate under a Normal load of 0 -200 lbs and Friction force of 0- 100 lbs. with wide range of speed (0 – 1000 rpm) and temp. (550 °C)
- ▶ To test as per international standards SAE J661 / IS 2742 / BSAU:142 / ISO 7881 / JASO-C418 etc.
- ▶ Important QA / R & D tool for direct comparison of sample to sample and bench mark / certification & edge coding of Brake Linings and Brake Pads.
- ▶ Normal and Hot / Coefficient of friction • Static Friction
Fade & Recovery • Specific wear rate
Good indicator of squeal / black dust / scoring and glazing.



COMPRESSIBILITY

- ▶ The Compressibility Tester measures deflection of friction materials viz; Drum brake linings , Disc brake pads and Truck brake blocks in microns upon compression at ambient and elevated temperatures up to 600 °C with excellent precision and reproducibility.
- ▶ This is one of the criteria of acceptance as per ECE-R 90 - COP Test and has high influence on NVH Behaviour when tested in accordance with ISO 6310 / JASO C-444 and SAE J-2468 standards.



DYNAMOMETER

▶ Brake Inertia Dynamometer popularly called 'Dyno Test' is a full scale testing of Brake shoes , Brake pads using actual Brake calliper / Drum / Disc and moment of inertia according to GVW etc. of the vehicle . Reports have direct comparison to vehicle test parameters viz;

- Dry and Wet friction
- Stopping Distance and Time
- Speed / Pressure sensitivity
- Emergency stop & Wear rate
- NVH properties .

▶ Popular International standards recommended by OEMs for Dyno test includes AK Master / FMVSS / SAE / JASO -C406 / IS 13453 / ECE- R90 etc.



KRAUSS TESTER

▶ Krauss Test though a full scale testing of Brake shoes , Brake pads using actual caliper/ drum / disc, however minus the use of inertia.

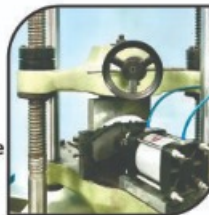
- ▶ Developed by ATE - Krauss GmbH as a short duration and low cost test when compared to Dyno Test but rated as most 'severe' due to continuous drag at temp. as high as 550°C
- ▶ Useful to assesses preliminary effectiveness , cold and hot performance of the friction material when tested as full sample .
- ▶ Considered as one of the criteria of acceptance of COP test as per ECE-R 90 for wide range of products viz, Brake Shoes , Linings, Brake Pads and CV Pads / Linings .



PHYSICAL - CHEMICAL - MECHANICAL TESTING :

(Standards as per ISO 2039 , ISO 6311 , ISO 6312 , ISO 6313 , ISO 6314 & ISO 6315 , JASO: C444 , IS:2742)

- ▶ Density ● Surface Hardness
- ▶ Bond Shear ● Plain shear ● Internal shear
- ▶ CBS ● TRS ● Rivet Holding strength
- ▶ Tensile ● Elastic Modulus ● Thermal Expansion
- ▶ Weathering Resistance ● Seizure to Metallic surface
- ▶ Acetone Extraction ● Volatile / Ignition Loss
- ▶ Porosity ● Heat / Water Swell



ASBESTOS DETECTION & ANALYSIS

▶ This is a qualitative analysis to confirm and certify whether the friction materials used in the brakes are free from banned Asbestos fibre or 100% asbestos free. Performed as per ISO 22262-1 standard recommended by Environment Protection Agency (EPA) under UNO using Stereo - PLM - Polarized Light Microscopy and Dispersion Staining technique. Extensive Gravimetric procedures used to prepare samples for analysis.

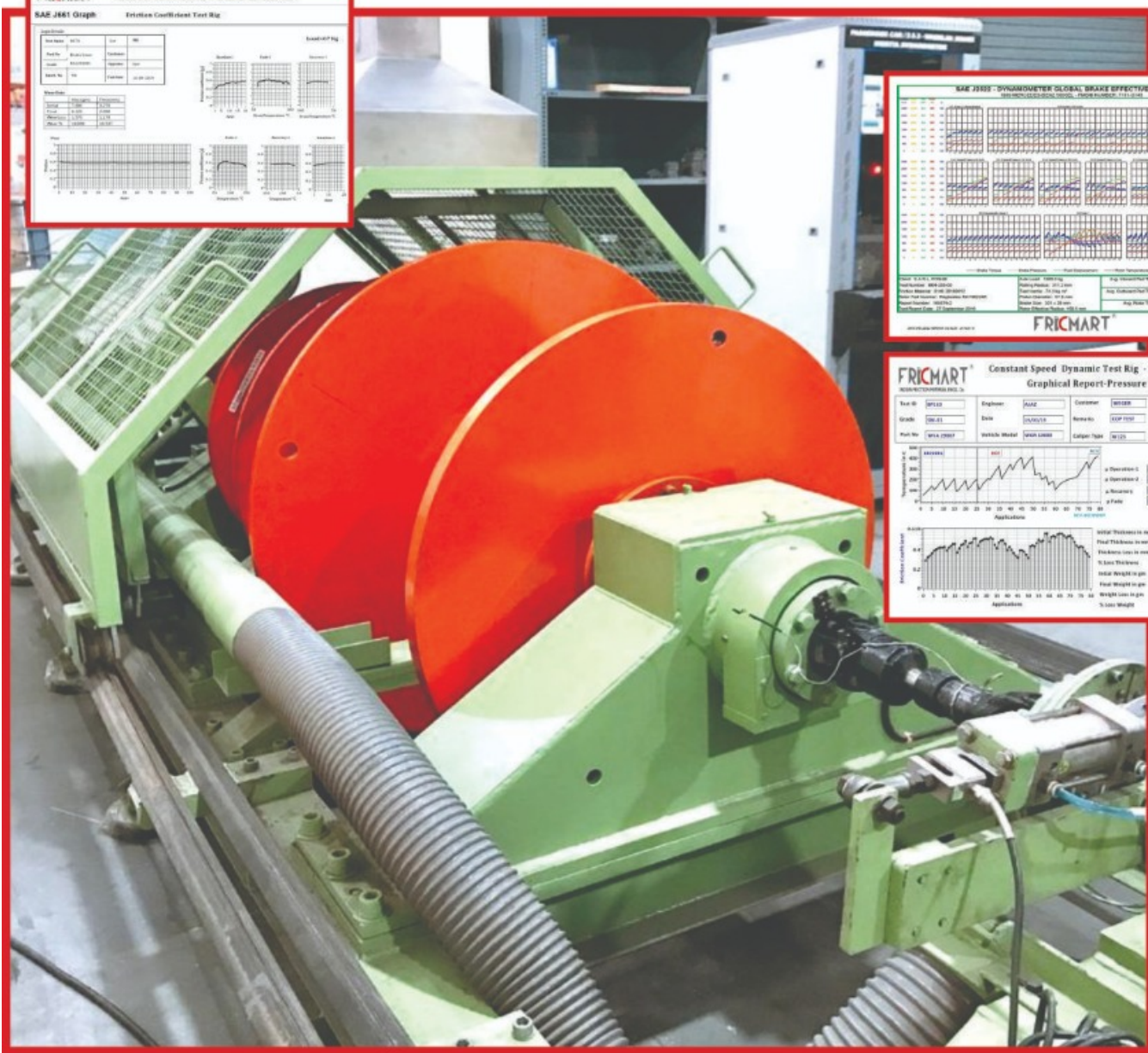
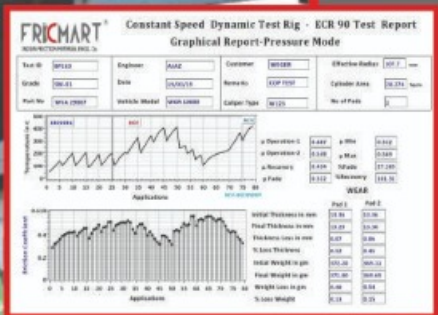
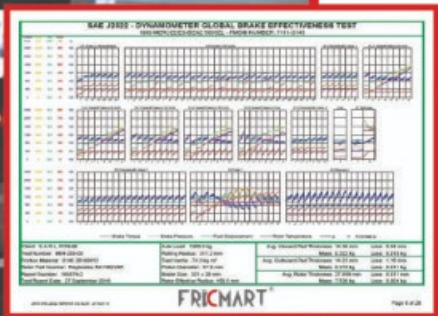
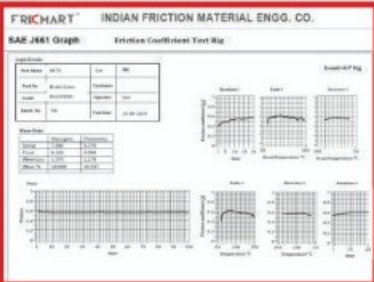


PROTOTYPE LAB

- ▶ **Fricmart's** strength includes the state of art in-house manufacturing and R & D facility for Brake Linings , Brake Shoes and Brake Pads.
- ▶ Equipments include Plough shear mixer ,battery of automatic Hydraulic Presses (60 – 250 Tons) Molds, Curing Ovens , Grinders etc.
- ▶ The R & D wing handles more than 150 raw material and additives used in friction material formulations in phase with international R & D hubs.



OUR EMINENT CLIENTELE



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