



**GREY MATTER**  
LABORATORIES



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*Just as grey matter in the human brain processes information, drives decision-making, and controls vital functions, Grey Matter Laboratories plays a pivotal role in empowering industries with accurate, insightful, and reliable analytical services.*

Our comprehensive range of services and products are designed to meet your unique needs and help you reach the optimum potential of your operations through data-driven insights.

## Our Services



Mineral analysis including chrome and manganese.

Liquid Fuel Analysis including diesel, petrol, motor and industrial oil.

Solid Fuel Analysis including coal, coke, Biomass

Water Quality analysis including drinking water, wastewater, industrial effluents, and groundwater.



# Mineral Analysis

## Chromite and Manganese Ores

Our services include the qualitative and quantitative analyses on Chromite and Manganese Ores, concentrates and tailings samples. The analyses covers sample preparations, chemical analyses and physical property measurements.

01

### Sample Preparation

- Drying
- Crushing
- Milling
- Screening
- Splitting

02

### Chemical Analyses

- X-Ray Fluorescence (XR-F Analysis)
- Wet Chemistry (Manual Titrations)

03

### Physical Properties

- Sieve Analysis
- Particle size Distribution
- AFS Grain Fineness Number (AFS GFN)
- Inherent Moisture
- Bulk density
- Specific Gravity



# Liquid Fuel Analysis

## Diesel & Petrol

Poor quality fuel can result in many engine related issues on petrol and diesel motor vehicles. These issues can wreak havoc

on engine performance leading to several failures in motor engines. Ensuring that the fuel you use meets the SANS 342:2016 specification for diesel and SANS 1598:2006 for petrol provides peace of mind, knowing that your engine is protected and its performance optimized.

Analysis	Diesel	Petrol
Distillation	X	X
Density at (20 Deg)	X	X
Viscosity at (40 Deg)	X	
Flashpoint	X	
Total Contamination	X	
Water Content	X	
Sulphur Content	X	
Cetane Number	X	
Colour and Appearance		X
Lead Content		X

## Industrial Automotive Oil

Industrial oil analysis is crucial for optimizing equipment performance, reducing downtime, and extending oil life by monitoring mechanical, operational, and environmental factors. It provides insights into both oil condition and machinery health, enabling efficient lubricant management, reduced waste, and streamlined operations. We offer the following analysis on industrial oil:



### Test Name

Elemental Analysis (by ICP)

Viscosity

Oxidation and Nitration

Water Content

Soot %

Fuel Dilution %

Acid Number (TAN)

Base Number (TBN)

Ferrous Debris (PQ)

ISO Code & Particle Count

Initial pH

Oil Filter Analysis

Particle Count (PC)

Particle Quantifier (PQ)

### Application Machinery

All engine types (diesel, gasoline, natural gas, biogas)

All engine types (diesel, gasoline, natural gas, biogas)

All engine types (diesel, gasoline, natural gas, biogas)

Diesel and gasoline engines

Diesel and gasoline engines

All engine types (diesel, gasoline, natural gas, biogas)

All engine types (diesel, gasoline, natural gas, biogas)

Engines, gears, and transmission systems

Hydraulic and compressor systems

Natural gas and biogas engine oils

Engines and machines with oil filters

All engine types (diesel, gasoline, natural gas, biogas)

All engine types (diesel, gasoline, natural gas, biogas)



# Solid Fuel Analysis

We cater to a wide range of biomass and coal types, including boiler coal, charcoal, and coke, ensuring reliable and precise testing for producers, consumers, and transporters. Our coal analysis is available as a standard package, with the option for clients to request additional testing parameters based on their specific needs and preferences.

## Standard Coal Test

## Special Testing

Sample Preparation

Chlorine

Total Moisture

Fluorine

Inherent Moisture

Hardgrove Index

Ash Content

Elemental Ash (XRF)

Volatile Matter

Ash Fusion Temperatures

Total Sulphur

Free Swelling Index

Gross & Net Calorific Value

Trace Metal Analysis

Carbon Size

Determination

Hydrogen

CSR/CRI

Nitrogen

Micum Testing

Fixed Carbon

Oxidation

Oxygen (by difference)

Fluidity & Dilatation

Total Moisture

Petrographic Testing

Stability

Wall Pressure Testing



# Water Analysis

We serve wastewater treatment works, industrial manufacturing plants, agricultural operations, and municipal water systems, among others. Our expertise ensures accurate and reliable results to support compliance with regulatory standards, optimize operational efficiency, and promote sustainable water management practices. Whether you're monitoring water quality, testing for contaminants, or ensuring process water meets industry-specific requirements, our analytical solutions are designed to deliver actionable insights for your business.

Drinking (Potable) Water SANAS 241-1: 2015	Waste Water (Effluent Water)	Process Water (Boiler and Cooling Towers and Condensers)
pH	Turbidity	P- Alkalinity (as CaCO <sub>3</sub> )
Electrical conductivity	Alkalinity	M-Alkalinity (as CaCO <sub>3</sub> )
Sodium Magnesium Calcium	Conductivity	pH
Chloride Sulphate	Ortho-phosphate	Total Hardness (as CaCO <sub>3</sub> )
Nitrate	Ammonia	Chlorides (as Cl)
Flouride	Calcium	Iron (as Fe)
Iron	Magnesium	Total Dissolved Salts (TDS)
Manganese	Sodium	Phosphonates
Total hardness	Potassium	Total Bacteria Count (TBC)
Oil and grease	Iron	Cycles of Concentration Cl
Ecoli	Manganese	Cycles of Concentration TDS
	Total hardness	OH Alkalinity (as CaCO <sub>3</sub> )
	Oil and grease Silicon	Chlorides (as Cl)
	Silica	Sulphite
	Ecoli	Phosphate (PO <sub>3</sub> )
	pH	
	Chloride	
	Sulphate	
	Nitrate	
	Flouride	