

# ADVANCED IN-HOUSE LABORATORY

Innovating with Technology

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**Enhancing Research and Safety  
with Cutting-Edge Solutions**



## Maurer Sanfield India Limited

**MAURER SANFIELD INDIA LIMITED** is the exclusive designer, manufacturer, and installer of a wide range of **HIGH PERFORMANCE AND SPECIALIZED CONSTRUCTION-RELATED PRODUCTS**, manufactured in Technical collaboration with various world-renowned Companies.

**MAURER - SANFIELD INDIA LIMITED** provides a single source responsibility from **DESIGN, MANUFACTURING, TESTING, MATERIAL SUPPLY, INSTALLATION AND AFTER SALES SERVICES** for all its product range.

**MAURER - SANFIELD INDIA LIMITED** is approved by **MORT&H (Ministry of Road Transport and Highways)** for all types of Expansion joints and Structural bearings with that We also have **RDSO (Research Design and Standards Organization) Ministry of Railways (GOI) Approval for BRIDGE BEARINGS, EXPANSION JOINTS, AND STEEL GIRDER FABRICATION.**

### Advanced In-House Laboratory

**We are thrilled to announce the launch of our state-of-the-art in-house advanced testing laboratory, a significant milestone in our commitment to quality assurance and scientific excellence.**

Equipped with cutting-edge mechanical and chemical testing capabilities, our laboratory sets new standards for precision, reliability, and quality in all our endeavors.

At our esteemed laboratory, we ensure the highest standards of quality and precision, surpassing industry benchmarks. With our in-house advanced testing facility, we cater to diverse industry needs, offering tailored solutions for mechanical and chemical analysis.

Our commitment to continuous improvement and innovation guarantees excellence and reliability, shaping the future of quality assurance and scientific proficiency.





WHY OUR LABORATORY IS A  
CUT ABOVE THE REST

- **Unmatched Quality**

Our lab ensures precise results with rigorous quality control.

- **Expert Team**

Skilled Professionals deliver top-notch services across industries.

- **Cutting-edge facilities**

Advanced technology meets diverse client needs.

- **Full Spectrum Testing**

*From chemistry to the environment, we offer tailored solutions.*

- **Swift Results**

Timely service without sacrificing accuracy.



## **MECHANICAL DISCIPLINE**

- **Digital Rockwell cum Brinell Hardness Tester (Rockwell Hardness Scale)**
- **Digital Universal Testing Machine (400 KN , Model : KUT- 40)**
- **Static Shear Modulus (Tensile Testing Machine)**
- **Digital Impact Machine (Charpy or IZOD)**
- **Specimen Cutting Machine**
- **Digital Density Balance Cum Weighing Balance**
- **Steel Surface Preparation Machine**
- **Meeting Point Apparatus**
- **Digital Temperature Indicator & Sub Zero Temperature Machine**
- **Compressor Set Test Apparatus**
- **Rubber Tensile Testing Machine**
- **Test Press Machine**
- **Fatigue Testing Machine**



### Digital Rockwell cum Brinell Hardness Tester (Rockwell Hardness Scale)

The Rockwell and Brinell hardness testers measure material hardness by indentation. Rockwell uses a diamond cone or steel ball indenter and calculates hardness based on penetration depth under a major load. Brinell employs a steel or carbide ball, applying a specified load to create an indentation, and hardness is derived from the indentation diameter. Both methods provide valuable information about material resistance to deformation.

### Digital Universal Testing Machine (400 KN , Model : KUT- 40)

The Digital Universal Testing Machine (400 KN, Model: KUT-40) measures material properties under tension, compression, and bending. It uses load cells and extensometers to provide precise digital data on strength, elasticity, and deformation, ensuring accurate analysis and quality control in various materials testing applications. The test is carried out at ambient temperature between 10°C and 35 °C, unless otherwise specified. Tests carried out under controlled conditions shall be made at a temperature of 23 °C ± 2°C.





### Static Shear Modulus (Tensile Testing Machine)

The static shear modulus, measured using a tensile testing machine, quantifies a material's rigidity by assessing its response to shear stress. During testing, a sample undergoes controlled shear forces, and the resulting deformation is recorded. The modulus is calculated by dividing the applied shear stress by the resultant shear strain, providing insights into the material's stiffness and structural integrity, crucial for applications requiring precise mechanical performance.



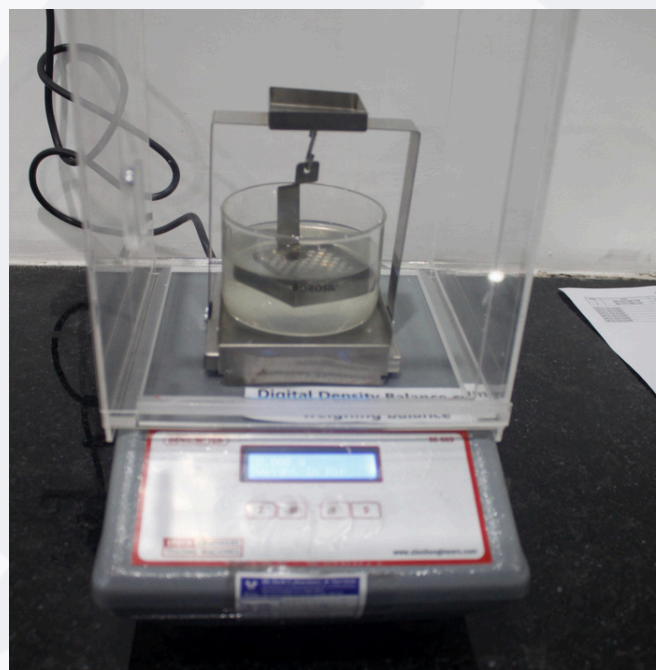
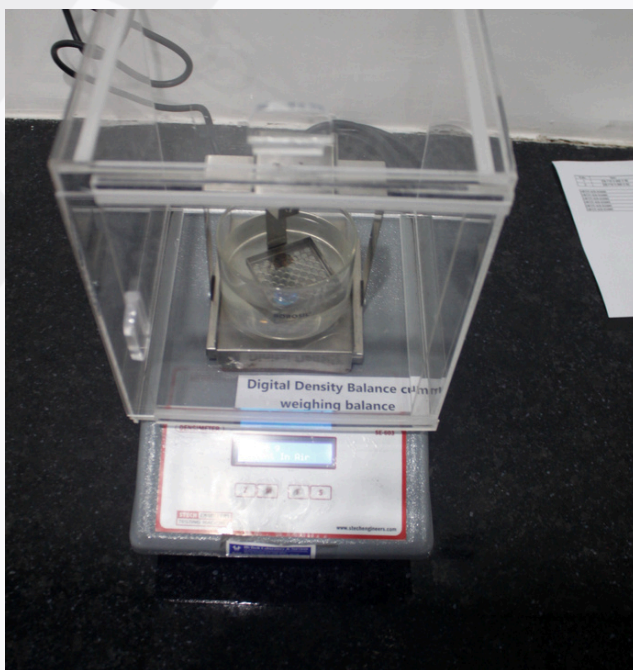
### Digital Impact Machine (Charpy or IZOD)

Impact tests are used in studying the toughness of the material. A material toughness is a factor in its ability to absorb energy during plastic deformation. Brittle materials have low toughness due to the small amount of plastic deformation they can endure. The impact value of a material can also change with temperature. Generally, at lower temperatures, the impact energy of a material is decreased. The size of the specimen may also affect the value of the impact test because it may allow a different number of imperfections in the material, which can act as stress risers and lower the impact energy.



### Specimen Cutting Machine

A specimen cutting machine precisely slices materials for testing, ensuring uniformity and accuracy. It operates using a robust blade or laser guided by automated controls, facilitating clean cuts with minimal deformation. The machine's precision enhances the reliability of subsequent analyses, vital for quality control and research. Adjustable settings accommodate various materials and dimensions, ensuring versatility in preparing specimens for mechanical, chemical, or structural evaluation.



### Digital Density Balance Cum Weighing Balance

A Digital Density Balance Cum Weighing Balance combines the functions of density measurement and weight determination in a single device. It operates on the principle of Archimedes' principle for density determination and utilizes a high-precision electronic weighing mechanism for mass measurement. The device calculates density by measuring the mass of a sample in air and in a liquid, then computing the density using the difference in mass and the known density of the liquid.



## Steel Surface Preparation Machine

Steel surface preparation machines operate by using mechanical, chemical, or abrasive techniques to clean and prepare steel surfaces for further processing. The primary principles involve removing rust, scale, old coatings, and contaminants to ensure proper adhesion of new coatings or treatments. Methods such as sandblasting, shot blasting, grinding, and chemical treatments are employed to achieve a clean and roughened surface. The process enhances the steel's durability, improves corrosion resistance, and ensures optimal performance of protective coatings. The choice of method depends on the steel's condition, desired surface profile, and specific application requirements.

## Melting Point Apparatus

The Melting Point Apparatus is based on the precise determination of the temperature at which a solid substance transitions to a liquid state. This transition, known as the melting point, is identified by heating a small sample in a controlled environment while observing it through a magnifying lens. The apparatus typically uses a capillary tube to hold the sample, which is gradually heated. The melting point is the temperature at which the substance first begins to liquefy until it is fully melted. Accurate measurement of this temperature is crucial for identifying and characterizing pure compounds and assessing their purity.





### Digital Temperature Indicator & Sub Zero Temperature Machine

High-precision instruments used for accurate temperature measurement and controlled sub-zero testing conditions. Ideal for evaluating material performance, durability, and behavior under extreme low-temperature environments, ensuring compliance with testing standards and quality benchmarks.



### Compressor Set Test Apparatus

A compressor set test apparatus evaluates the performance and efficiency of air compressors by simulating operating conditions. It includes sensors and instruments to measure parameters like pressure, temperature, flow rate, and power consumption. The apparatus typically consists of a compressor, a drive unit, control systems, and data acquisition tools. It ensures accurate and repeatable tests by maintaining controlled environmental conditions and standardizing procedures. This allows for the assessment of the compressor's capacity, energy efficiency, and overall reliability, helping to identify areas for improvement and ensuring compliance with industry standards.

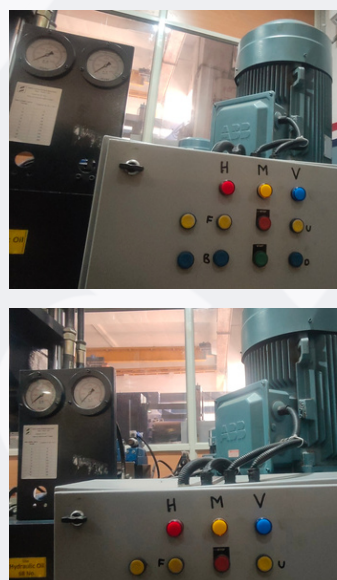


### Rubber tensile Testing Machine

A rubber tensile testing machine evaluates the mechanical properties of rubber by measuring its response to tensile (stretching) forces. The machine clamps a rubber specimen at both ends and applies a controlled, increasing axial force. Key principles include precise force application and accurate elongation measurement. As the specimen elongates, sensors record the force and elongation data, which is then used to determine properties such as tensile strength, elongation at break, and modulus of elasticity. The test follows standardized procedures to ensure repeatability and reliability, providing critical information for material selection and quality control in rubber manufacturing.

### Test Press Machine

Maurer Sanfield India Limited, the first in India to introduce a 1000-ton bearing testing press, boasts one of the largest testing facilities in its sector with four advanced test presses (TP-1 to TP-4). These presses support vertical (up to 40,000kN) and horizontal load testing (up to 10,000kN) with varying stroke capacities. They cater to diverse customer requirements, enabling tests on components up to 1400mm in length and 1000mm in height. Accredited with ISO 9001:2015(E), FPC EN 1090-1 EXC3, and CE Certification, the company ensures quality and precision in testing, maintaining compliance with global standards.



### Fatigue Testing Machine

Maurer Sanfield India Limited's Static/Dynamic Fatigue Testing Machine (TP-5) is a state-of-the-art facility designed for precise and reliable testing. It features a compressive/vertical load capacity of 50MT with a stroke of 600mm and a pull/horizontal load capacity of 20MT with a stroke of 150mm. TP-5 is capable of accommodating test specimens up to 275mm in length, 275mm in width, and 235mm in height/thickness. This advanced machine is ideal for evaluating the performance of materials and components under static and dynamic fatigue conditions, ensuring adherence to quality and durability standards across a wide range of applications.



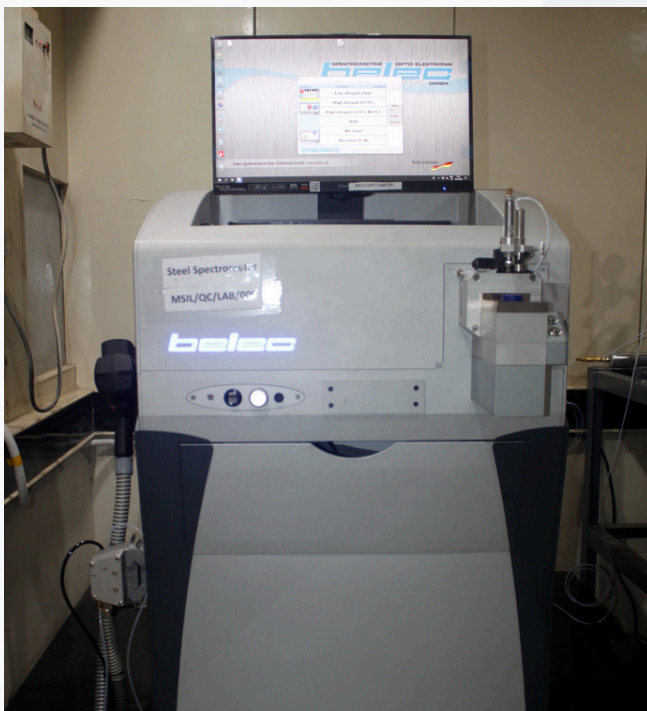
## CHEMICAL DISCIPLINE

- **Soxhlet Extraction Unit  
(Soxhlet Apparatus)**
- **Steel Spectrometer**
- **T.G.A Machine**
- **F.T.I.R Machine**
- **Ageing Oven**
- **Ozone Chamber**



### Soxhlet Extraction Unit (Soxhlet Apparatus)

The Soxhlet apparatus facilitates the extraction of compounds from solid samples. It consists of a thimble containing the sample, placed in a chamber connected to a solvent reservoir. The solvent is heated to its boiling point, creating vapor that rises, condenses, and drips onto the sample, dissolving the desired compounds. As the solvent level rises, it siphons back into the reservoir, allowing continuous extraction until maximum yield is achieved.



### Steel Spectrometer

A steel spectrometer operates on the principle of optical emission spectroscopy (OES) to analyze the elemental composition of steel. When a steel sample is excited, typically by an electric arc or spark, its atoms emit light at characteristic wavelengths. These wavelengths correspond to specific elements within the steel. The emitted light is then dispersed by a diffraction grating or prism, separating it into its constituent wavelengths. A detector measures the intensity of these wavelengths, producing a spectrum that indicates the presence and concentration of various elements. By comparing the spectrum against known standards, the spectrometer can accurately determine the composition of the steel sample. This method is highly precise and rapid, making it indispensable in quality control and material verification in the steel industry.



### T.G.A Machine

Thermogravimetric Analysis (TGA) machine measures the change in weight of a sample as it is heated, cooled, or held at a constant temperature. The primary principle involves placing a sample in a high-precision balance within a temperature-controlled furnace. As the temperature varies, the sample undergoes physical or chemical changes that result in weight loss or gain, recorded continuously by the balance. TGA provides insights into thermal stability, composition, and decomposition kinetics of materials by analyzing the weight changes relative to temperature and time.

### F.T.I.R Machine

FTIR (Fourier Transform Infrared) spectroscopy is an analytical technique used to identify organic, polymeric, and, in some cases, inorganic materials. It operates by passing an infrared light through a sample. The sample absorbs infrared radiation at specific wavelengths, creating a unique molecular fingerprint. The FTIR machine then measures the intensity of transmitted or reflected light across a range of wavelengths. By applying a mathematical Fourier transform, the machine converts the raw data into a spectrum. This spectrum reveals the material's molecular composition and structure based on characteristic absorption bands.





## Ageing Oven

An ageing oven accelerates the natural ageing process of materials, particularly polymers and rubbers, to predict their long-term performance. It operates by exposing samples to elevated temperatures and controlled environments, thereby simulating prolonged exposure to heat, oxygen, and other environmental factors in a compressed timeframe. This process helps identify changes in physical and chemical properties, such as tensile strength, elasticity, and degradation. By understanding these changes, manufacturers can assess the durability and lifespan of materials, ensuring quality and reliability in various applications. Ageing ovens are crucial in industries like automotive, aerospace, and electronics for testing material stability and performance.

## Ozone Chamber

An ozone chamber is a controlled environment used to study the effects of ozone on materials, organisms, and chemical reactions. The chamber maintains precise ozone concentrations, temperature, humidity, and airflow to simulate real-world conditions. Ozone is generated using an ozone generator, typically through electrical discharge or ultraviolet light, and its concentration is continuously monitored. The chamber's airtight construction ensures accurate exposure levels, enabling researchers to investigate ozone's impact on degradation, aging, and biological responses. This setup is essential for testing product durability, studying environmental and health effects, and developing ozone-resistant materials.





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