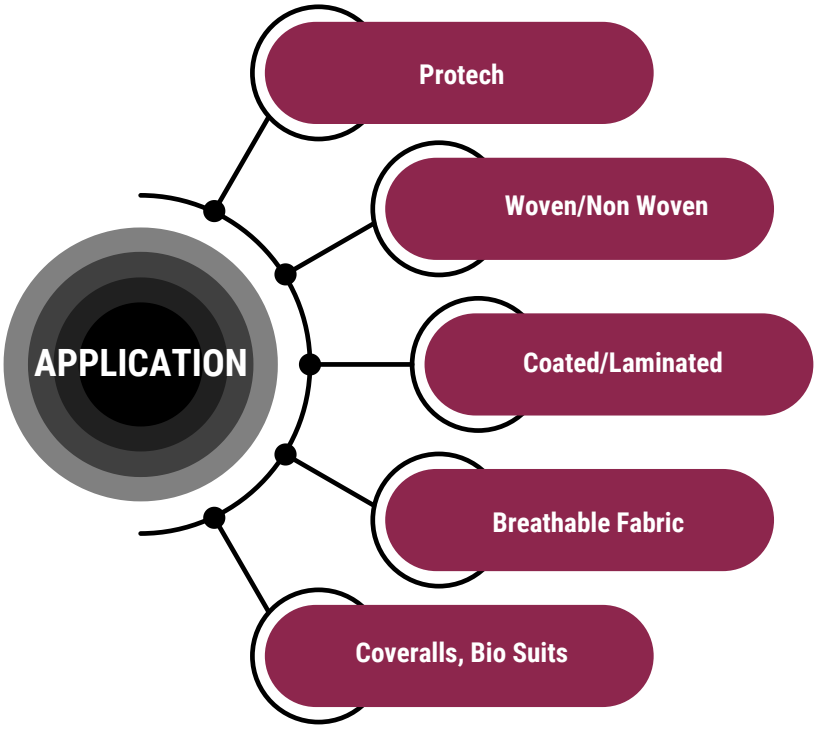

M19
MATERIAL
INTELLIGENCE
LAB

**At M19-Material Intelligence Lab, Baroda, we create and deliver game changing Textile Testing Technologies enabling you to develop the fabric of the future, enhance your competitive market position, supported by our world leading characterization products, lab testing and certification division.**

**Textiles play a crucial role in our daily lives, serving as the foundation of clothing, medical supplies, and various industrial applications. The quality and functionality of textiles are determined by a range of properties, including Fabric Pore Size, Permeability, Porosity, Hydrostatic Pressure Head, Synthetic Blood Penetration, and Water Vapor Transmission. Accurate measurement of these properties is essential to ensure that textiles meet their intended purposes and adhere to industry standards. In this guide, we will explore advanced laboratory instruments designed for precise testing of these textile properties, shedding light on the technology and methodologies behind these critical analysis.**

## HOW WE HELP?

- Design & Manufacture Lab Instruments
- Lab Testing Services
- Identify & Rectify Failures
- Improve Product Performance
- Ensure Your QA/QC Requirements



# PRODUCT PORTFOLIO


## GAS PERMEABILITY ANALYZER

The GP-100 device is used to determine the permeability of porous media. The steady state flow of gas such as air/nitrogen is measured using an accurate mass flow meter in relation to time and pressure differential. Gas Permeability can be calculated in Darcy, Frazier or Gurley units. GP-100 is user-friendly, features non-destructive testing that is perfect both R&D and QA/QC purposes.

Standard : ASTM D737-18

Test Range : 1×10-50 Darcy

Test Duration : 10 minutes

Precision : 0.15% of reading

Application: Wovens, Non-Woven, Spunbond, Meltblown, Uncoated/Coated Fabrics, Meditech, Sportstech, Geotech, Defense Fabrics, PPE, Coverall.

## DIFFUSIONAL PERMEABILITY ANALYZER

A diffusion permeability analyzer is a laboratory instrument used to measure the permeability of materials to gases, vapors, or small molecules through a diffusion process. It helps determine how easily specific gases or molecules can pass through a material over time, providing crucial data for applications such as packaging, membrane development, and the study of gas transport in various materials. It is a valuable tool for understanding and optimizing the performance of materials in gas separation, filtration, and protective barrier applications.


Standard : ASTM D1434

Test Range : 0.05 -50,000 cm3 /m2·24h·0.1MPa

Test Duration : 60 minutes

Precision : 0.001 cm3/ m2·24h·0.1MPa

Application: Food and Beverage Industry, Electronics Manufacturing, Packaging Industry, Thin Films, Membranes, Energy Storage.

# PRODUCT PORTFOLIO


## MICROPORE ANALYZER

The Micro Pore Analyzer device stands out as a cutting-edge pore size analyzer, offering remarkable capabilities. Its advanced technology relies on both liquid displacement and capillary flow porometry, making it highly efficient in characterizing the pore sizes of various fabric such as woven, non-woven, spunboand/meltblown media. The device is specifically tailored for microporous media, making it an ideal choice for evaluating the performance of a wide range of textile products and provide accurate and detailed insights into the fabric's pore structure.

Standard : ASTM F316, ASTM D6767

Test Range : 0.1-100 microns

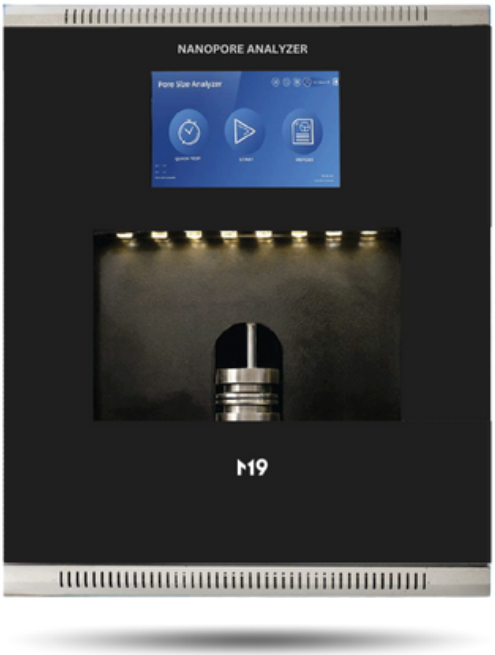
Test Duration : 0 -3 minutes

Precision : 0.01% F.S

Application: Air Filter Products, HEPA, Woven/Non-Woven, Spunbond Media, Meltblown, HVAC

## NANOPORE ANALYZER

The Nanopore Analyzer (NPA-500) device stands out as a cutting-edge pore size analyzer, offering remarkable capabilities. Its advanced technology relies on both liquid displacement and capillary flow porometry, making it highly efficient in characterizing the pore sizes of coated/laminated fabrics. The device is specifically tailored for the nanoporous media, making it an ideal choice for evaluating the performance of coated media and provide accurate and detailed insights into fabric's pore structure.




Standard : ASTM F316, ASTM D6767

Test Range : 0.01-10 microns

Test Duration : 0 -10 minutes

Precision : 0.01% F.S

Application: Air Filter Products, HEPA, Woven/Non-Woven, Spunbond Media, Meltblown, HVAC

# PRODUCT PORTFOLIO


## WATER VAPOR TRANSMISSION ANALYZER

The WVTR-50 equipment utilizes gravimetric analysis following the ASTM E96 upright cup method to measure the water vapor transmission rate of materials. The WVTR is determined by evaluating the gain in water vapor mass across the specimen over time. From this WVTR value, permeance and permeability are calculated. To compute the water vapor mass gained across the specimen, the change in relative humidity in the top cell is measured. The data points, representing the water vapor mass gained over time, are recorded and plotted.

- Standard : ASTM E96
- Test Range : 0.1-9000 g/m2/day
- Test Duration : 60 minutes
- Precision : 0.1% F.S

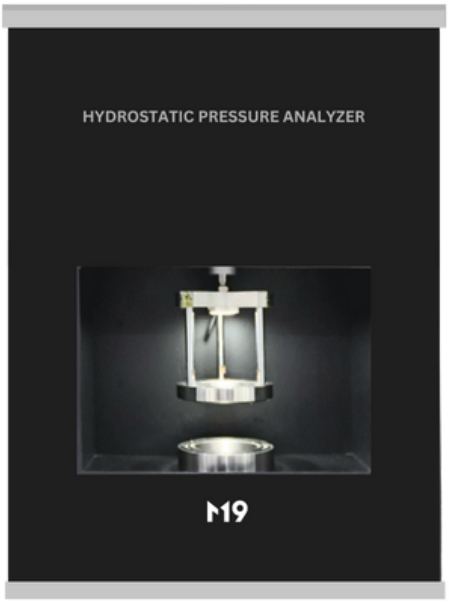
Application: Food Industry, Packaging Industry, Technical Textile, Fabric & Garments, Construction Material.

## FILTRATION EFFICIENCY ANALYZER

The FEA-50 is a device designed to evaluate a fabric's ability to resist the penetration of particulate matter, taking into account factors such as yarn, weave, and surface finish. This is achieved through an automated aerosol control system that applies either mon or poly dispersed particles to one side of the fabric, and the particle counts in the upstream and downstream, along with differential pressure are detected.


- Standard : ASTM F2100
- Test Range : 0-99.99%
- Test Duration : 25 minutes
- Precision : ±0.01% of F.S

Application: Automotive Emissions, Industrial Air Quality, Indoor Air Quality, Cleanroom, HVAC System, Ventilation System Design.




## HYDROSTATIC PRESSURE HEAD ANALYZER

The HPA-50 is a device designed to evaluate a fabric's ability to resist the penetration of water under hydrostatic pressure, taking into account factors such as yarn, weave, and surface finish. This is achieved through an automated control system that applies either static or dynamic force, incrementally increasing until at least 3 points of leakage are detected.

Standard : AATCC127

Test Range : 0 -3000 mbar

Test Duration : 1 minute

Precision : ±0.5% of display value

Application: Technical Textile, Defense War Suits, Packaging Materials, Bio Suits, PPE.

## SYNTHETIC BLOOD PENETRATION ANALYZER

A synthetic blood penetration analyzer is used to test the resistance of materials, such as protective clothing and medical textiles, to the penetration of synthetic blood or other fluids. It assesses the material's ability to prevent the passage of liquids and is often used to evaluate the barrier properties of materials in healthcare settings to ensure protection against bloodborne pathogens and other contaminants. The analyzer typically measures the pressure required for fluid penetration and provides valuable data for material selection and quality control in industries like healthcare, pharmaceuticals, and personal protective equipment manufacturing


Standard : ASTM F1862

Test Range : 0-50KPa

Test Duration : 0 -5 minutes

Precision : ±0.5%FS

Application: Medical Gowns and Apparel, Surgical Drapes and Covers, PPE, Textile, Disposable Medical Products, Infection Control

# EASY 3- STEP PROCESS TO ACCESS M19 TESTING SERVICES

### Step 1: Sample Preparation

1.1 Select the Sample: Choose representative sample from your batch for testing.

1.2 Package Your Sample: Pack your sample securely to prevent any damage during transit. Each sample should be individually wrapped and labeled to ensure they can be easily identified.
Make sure to include the Sample Specification Sheet detailing important information, such as the type of fabric, manufacturer, model, and any specific tests requested.

### Step 2: Sample Dispatch

2.1 Select a Reputable Courier: Choose a reliable courier service that offers tracking and ensures your package will arrive safely at the lab.

2.2 Address and Dispatch: Clearly write the laboratory's address on your package and dispatch it via your chosen courier.

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*(Porelab Scientific Pvt Ltd)*
*801/802 K10 Grand,*
*Sarabhai Campus,*
*Vadodara, Gujarat-390007*
*Ph- +91 8140308833*

2.3 Share Tracking Information: Share the courier tracking number with the lab so they can anticipate the arrival of your samples.

### Step 3: Lab Confirmation and Follow-up

3.1 Arrival Confirmation: Upon receipt of your samples, M19 lab team shall confirm their arrival and condition.

3.2 Lab Testing: The lab will then perform the requested tests. The timeline for this can vary depending on the complexity and volume of the tests.

3.3 Results and Report: Once testing is complete, M19 lab team will compile a detailed report and share the results with you. This may be done via email, through a client portal, or mailed as a hard copy, depending on the lab's practices and your preferences.

# CLIENTS

Kusumgar
Unusual is usual

DRDO
DMSRDE
DEFENCE R&D ORGANISATION
MINISTRY OF DEFENCE

रक्षा अनुसंधान तथा विकास संगठन
डी. आर. डी. ई., ग्वालियर

NPL INDIA
राष्ट्रीय भौतिक प्रयोगशाला
CSIR-National Physical Laboratory
National Metrology Institute

HV
Hollingsworth & Vose

Reliance
Industries Limited

3M

Donaldson
FILTRATION SOLUTIONS

Parker

AHLSTROM MUNKSJÖ

NPL INDIA
राष्ट्रीय भौतिक प्रयोगशाला
CSIR-National Physical Laboratory
National Metrology Institute

SUNY RF

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DEFENCE R&D ORGANISATION
MINISTRY OF DEFENCE

भाकृअनुप
ICAR

Unilever

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ATIRA
अनुसंधानात् समृद्धिः

Indian Institute of Science
Bangalore

INDIAN INSTITUTE OF TECHNOLOGY DELHI

Arvind
Advanced Materials

Indian Peroxide
SPECIALTY CHEMICALS COMPANY

TRADE
Jindal
MARK

Birla Cellulose
Fibres from nature

GFL™
GUJARAT FLUOROCHEMICALS
VALUE THROUGH GREEN CHEMISTRY

ADITYA BIRLA
GRASIM

## MISSION

**Why we exist; why the world will be different because we are here?**

The mission of M19 Team is to provide high precision insights in the Nanoscale World with seamless coordination and provide advance material characterizations through unrivalled education, research and outreach in the many diverse industry we serve.

## VISION

**Who we want to become; what we want to achieve or create?**

The M19 lab's vision is to continue to grow and challenge convention through our pioneering spirit, scientific advancements, forward thinking leadership, collaborative approach to provide exceptional material testing support.

## BRAND PROMISE

**The net benefit we deliver to those we serve.**

M19 lab is the choice for ground-breaking material research.
Our unrivalled education, translational research laboratory, custom instruments ensure that we deliver the best laboratory support from everyday products to testing of the most serious and complex material products.

# FAQ's

- **What is the role of Pore Size Measurement in Technical Textiles?**

  Fabric pore size is a vital parameter that influences a textile's breathability, filtration capabilities, and comfort. Advanced laboratory instruments employ various techniques to determine fabric pore size accurately. One commonly used method is the Capillary Flow Porometry (CFP), which utilizes the intrusion of wetting liquid into the pores of a fabric under controlled pressure. The resulting data allows researchers and manufacturers to characterize the pore size distribution, which is crucial in optimizing fabric performance for specific applications. By quantifying fabric pore size, these instruments aid in the development of textiles with improved moisture management, comfort, and filtration properties.

- **What is the importance of Permeability and Porosity Analysis?**

  Textile permeability and porosity are essential factors in applications such as filtration, wound dressings, and protective clothing. Advanced lab instruments employ techniques like the Darcy, Gurley method and the Frazier method to measure air permeability and porosity, respectively. These methods involve measuring the air flow rate through a fabric under controlled conditions. Accurate determination of permeability and porosity enables manufacturers to design textiles with tailored breathability and filtration characteristics, ensuring that the material meets the stringent requirements of various industries.

- **What is Hydrostatic Pressure Head Testing?**

  Hydrostatic pressure head testing is critical for evaluating the waterproof capabilities of textiles, such as rainwear, outdoor gear, and medical drapes. Specialized instruments subject the fabric to a steadily increasing water column until water penetration occurs. The pressure at which this happens is known as the hydrostatic pressure head. Advanced instruments allow precise control of test parameters and provide reliable data, enabling manufacturers to produce textiles that meet the desired water resistance standards. This testing ensures that the textiles effectively protect users from exposure to moisture, making them suitable for various applications.

- **What is Synthetic Blood Penetration and Water Vapor Transmission Analysis?**

  In medical and protective clothing, textiles must offer resistance to fluid penetration, such as synthetic blood, while still allowing the transmission of water vapor to maintain wearer comfort. Advanced laboratory instruments are designed for both synthetic blood penetration testing and water vapor transmission analysis. The former assesses a textile's ability to withstand liquid penetration, ensuring it meets safety standards in healthcare and other fields. The latter measures the rate at which water vapor passes through a fabric, a critical parameter for textiles used in breathable and moisture-wicking garments. These advanced tests help ensure that textiles provide both protection and comfort, enhancing their performance in various demanding environments.

- **What is the benefits of M19 Lab Products?**

  M19 Lab Products are fully automated and digital instruments Advanced AI based software control program is provided for easy operation and test report generation. Also, M19 lab team offers better after sales support, AMC. Since the products are designed and manufactured in India.

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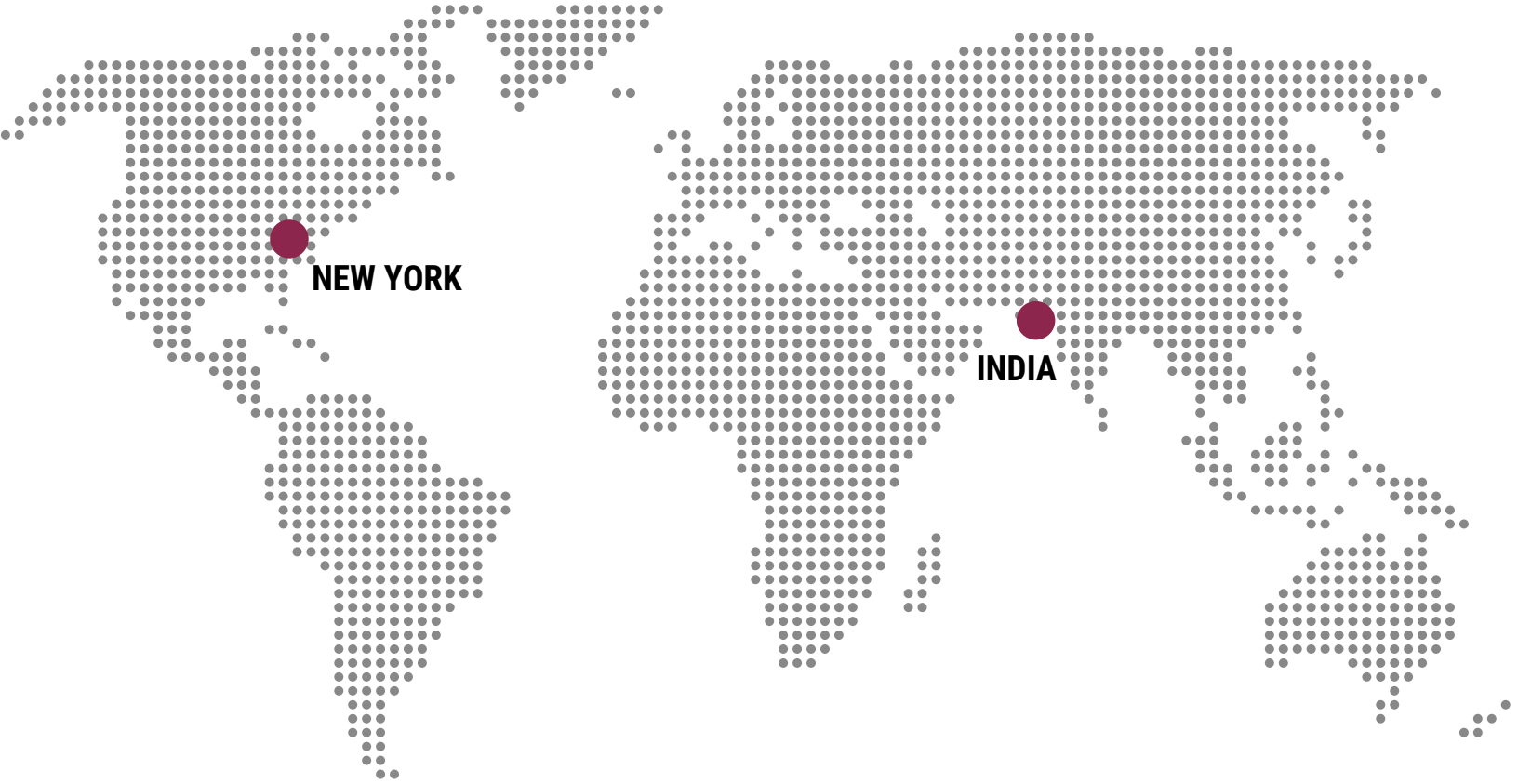


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