

NUPORE®

Your trusted manufacturing partner for critical Micro-filtration,
Rapid Test Diagnostics and Single Use Solutions

BIOPHARMA FILTRATION

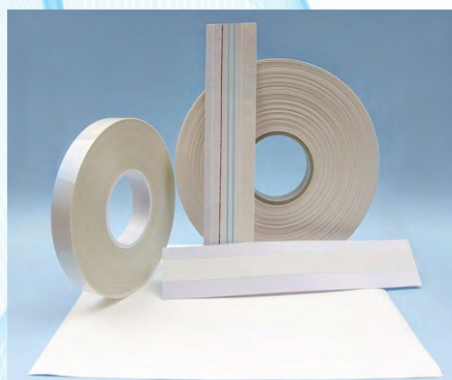


**MICROBIOLOGY,
LAB & ANALYTICAL**



DIAGNOSTICS

SINGLE USE SOLUTIONS



www.nupore.com



ABOUT US

Founded in 1989, Nupore Filtration Systems manufactures a range of critical filtration membranes & devices and single use bags & assemblies. We operate through 3 manufacturing facilities in India and offer over 1,000 products catering to various applications across Pharmaceuticals, Diagnostics, Life Sciences Research, Biopharma, Microbiology and Food & Beverage verticals.

3 Decades of Filtration

We have been at the forefront of membrane filtration technology since 1989. Our experienced team helps you choose the right filtration solution at the right place.

Customized Solutions

We design & engineer solutions after carefully understanding your technological & regulatory requirements to provide the optimum bespoke solution to any application.

Committed to Quality

Carefully selected raw materials, controlled manufacturing processes, stringent quality checks and commitment to continuous improvement help us maintain the highest quality standards.

Accredited Infrastructure

Certified manufacturing & assembling facilities and ISO class 8 clean rooms help us meet global standards as required by the critical applications in the Pharma and Diagnostics markets.



Our Customers and Distribution Partners are spread across 16 Countries Globally.



PORECAP® CAPSULE FILTERS

PES | PVDF | PTFE | NYLON | GLASS FIBER | POLYPROPYLENE

Pore Size ranging from 0.1µm to 50µm*

PoreCap® series of capsule filters are available in sterile and non-sterile options with diversified media, and are especially designed and developed for the removal of particles or bacteria or microbes from aqueous or solvent solutions or air/gas streams. Each capsule filter unit has been integrity tested as per PDA Technical Report 26 (TR26) recommendation and complies with USP and ASTM requirements for extractable limits.

Microbial Validation

Validated as per the ASTM F838-05 requirements for determining bacterial retention of membrane filters used for liquid filtration.

Biosafety & Extractables

Passes the biological tests for Class VI plastics as described in USP. Our filters are thermally bonded to seal the media (no adhesives are used) to prevent extraction.

Global Manufacturing Standards

Manufacturing lot complies with cGMP requirements.

FDA Compliant

Construction raw materials meet the requirements as specified by FDA in Title 21 CFR section 177.1520.

Integrity Tested

Integrity tested to assure reliable filtration performance (bubble point & diffusion flow values provided).

Easy Identification & Tracking

Each Porecap filter unit has a unique identification marking which enables quick backtracking.

Available in multiple size options: 1", 2", 5", 8", 10" and 20"

End Connections



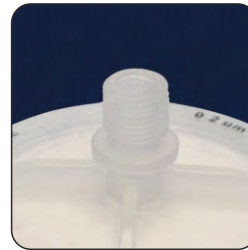
1/2" MNPT



1/4" MNPT



1/4" MNPT with SS Ring



1/8" MNPT



3/4" TC (Sanitary flange)



1.5" TC (Sanitary flange)



1/2" Multi Stepped HB



1/2" Single Stepped HB



1/4" Multi Stepped HB



Bell with Cover

* Pore sizes are subject to different membranes



NUCART® CARTRIDGE FILTERS

PES | PVDF | PTFE | NYLON | GLASS FIBER | POLYPROPYLENE

Pore Size ranging from 0.1µm to 50µm*

NuCart® series of cartridge filters are available with diversified media, and are especially designed and developed for the removal of particles or bacteria or microbes from aqueous or solvent solutions or air/gas streams. Each cartridge filter unit has been tested for integrity test methodology as per PDA Technical Report 26 (TR26) recommendation and complies with USP and ASTM requirements for extractable limits.

Microbial Validation

Validated as per the ASTM F838-05 requirements for determining bacterial retention of membrane filters used for liquid filtration.

Biosafety & Extractables

Passes the biological tests for Class VI plastics as described in USP. Our filters are thermally bonded to seal the media (no adhesives are used) to prevent extraction.

Global Manufacturing Standards

Manufacturing lot complies with cGMP requirements.

FDA Compliant

Construction raw materials meet the requirements as specified by FDA in Title 21 CFR section 177.1520.

Integrity Tested

Integrity tested to assure reliable filtration performance (bubble point & diffusion flow values provided).

Easy Identification & Tracking

Each Nucart filter unit has a unique identification marking which enables quick backtracking.

Available in multiple size options: 3", 5", 10", 20", 30" and 40" (9.75" - BEO Adaptor only standard length)

Adaptors



Adaptor 4463



Adaptor 4463B



Adaptor M-Disc



Adaptor 4440



Adaptor K-Seal



Adaptor Optiseal



Finn End



Adaptor 7P



BEO Standard Length



BEO Extra Length

* Pore sizes are subject to different membranes



TRUVENT® & INLINE FILTERS

PES | PVDF | PTFE | NYLON | GLASS FIBER | POLYPROPYLENE

Pore Size ranging from 0.1µm to 50µm*

TruVent® & Inline filters are available in 50mm & 70mm size options and are most predominantly used with sterilizing grade 0.2µm Hydrophobic PTFE, PVDF, PES membranes for venting applications such as air or gas sterile filtration. We also offer these filters with Hydrophilic PES, PVDF and other membranes for small batch filtration of sterile liquids.

Microbial Validation

Validated as per the ASTM F838-05 requirements for determining bacterial retention of membrane filters used for liquid filtration.

FDA Compliant

Construction raw materials meet the requirements as specified by FDA in Title 21CFR section 177.1520.

Available in 50mm & 70mm Diameter

Biosafety & Extractables

Passes the biological tests for Class VI plastics as described in USP. Our filters are thermally bonded to seal the media (no adhesives are used) to prevent extraction.

Integrity Tested

Integrity tested to assure reliable filtration performance (bubble point & diffusion flow values provided).

Global Manufacturing Standards

Manufacturing lot complies with cGMP requirements.

Easy Identification & Tracking

Each of the filter unit has a unique identification marking which enables quick backtracking.

MEMBRANE DISC FILTERS



Nylon -66 Type NN



Double-layered hydrophilic, non-media migrating, biologically inert, flexible and plain white absolute Nylon membrane filters.

Pore Size(µm): 0.2, 0.45, 0.80, 1.20

Key Applications

- HPLC sample filtration
- Mobile phase filtration
- Filtration of aqueous solution

Cellulose Nitrate Type CN



Hydrophilic, non-media migrating, biologically inert, flexible and plain white absolute CN membrane filters

Pore Size(µm): 0.2, 0.45, 0.80, 1.20, 3.0, 5.0, 8.0

Key Applications

- Sample preparation
- Microbiological studies
- Filtration of aqueous solutions

Glassfiber Pre-Filter GF4 & GF5



Borosilicate micro glass fiber filter is a general purpose filter widely used for pre-filtration applications and to clarify viscous solution.

Pore Size(µm): 1.5, 2.0

Key Applications

- Pre-filtration of a wide variety of solvents and solutions
- To protect membrane filter
- To remove colloidal particles

* Pore sizes are subject to different membranes



BIOPAC SINGLE-USE BAGS

2D BAGS | 3D BAGS | LINERS

Size 10ml to 2000L

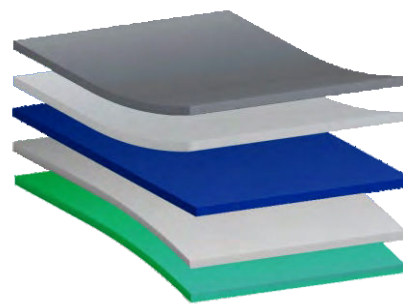
Nupore Single-use Bioprocess bags and assemblies are pre-sterilized customized products to meet your specific needs of storage, transfer and processing of media, buffers, intermediate fluids etc.

We offer a wide range of bags from 10 mL to 2000 L, made of highest quality components and assembled in certified ISO Class 7 Cleanroom, to ensure compliance and safety. These are validated for integrity, microbial ingress, sterility, bacterial endotoxins, biosafety and extractables.

KEY COMPONENTS

Multi-layer Film Structure

BioPac Single-use bags are fabricated from medical-grade, multilayer polyethylene film specially designed for bioprocess applications. The film provides exceptional compatibility, high strength and superior barrier to Oxygen, Carbon Dioxide and Moisture. The contact layer is made of ultra low density polyethylene layer which is free of any antioxidants, plasticizers, or adhesives.



- 0.05 mm LDPE
Outer layer
- 0.01 mm TIE
Bonding layer
- 0.02 mm EVOH
Gas barrier layer
- 0.01 mm TIE
Bonding layer
- 0.23 mm ULDPE
Fluid contact layer

Tubing

Thermoplastic elastomers (TPE) and Platinum-cured silicone tubes with wide range of inner and outer diameters, as per user and process requirements.

Filters

Nupore capsule filters and vent filters are available with multiple options of PES, PVDF, PTFE and Nylon-66 membranes in different pore sizes and end connections.

Connections







Variety of fittings such as:

Quick connections, T-connections, Y-connections, Bag ports, Cross connections, Reducers and Steam-through connections are available for customized assemblies.

Other Essential Fittings

Nupore offers all the other essential components including clamps, plugs, valves, luer locks and caps for complete single-use assembly.

Applications:

-  Sterile Media and Buffer preparation, storage and transfer
-  Aseptic transfer of drug products and sterile media
-  Virus inactivation
-  Upstream & downstream biopharma processing
-  Process intermediate storage
-  Cell culture and harvesting

Our Products are validated and comply with:

- ISO 10993-10 Irritation & Sensitization
- ISO 10993-11 Acute Systemic Toxicity
- ISO 10993-4 Hemolysis
- ISO 10993-6 Implantation test
- USP <88> Biological reactivity testing, in vivo, class VI
- USP <85> Bacterial Endotoxins – LAL
- ISO 10993-5 Cytotoxicity
- European Pharmacopoeia tests 3.1.5
- USP <87> Biological Reactivity in vitro
- USP <661.1> Polyethylene Physicochemical Tests, Extractable Metals



MICROBIOLOGY

SteriFunnel® | E-Funnel | Manifolds | GCN & MCE Membrane

SteriFunnel®

Pre-sterilized disposable devices mainly used for microbial analysis and sterility testing. Manufactured using FDA compliant materials, these are ready to use filtration devices available with various membranes (**GCN, PVDF, MCE-Gridded or Plain**), with or without absorbent pad.

These are designed as per global standards and fit directly on most filter manifolds. After filtration, its cover and base can be used as a petridish by directly adding culture media to avoid cross-contamination during the transfer of the membrane.

Key Applications

- Sterility testing of water
- Microbial contamination analysis
- Analysis in aqueous formulations
- Quality control analysis of final product release
- Bio-burden analysis in API manufacturing samples
- Testing of antibiotic solutions



E-Funnel



Nupore E-funnel is an easy-to-use, individually packed and disposable filtration device with a detachable 100 ml funnel and pluggable bottom for ease of sample collection and transfer to laboratory.

It consists of a 0.45µm **Edge Hydrophobic Cellulose Nitrate membrane** and therefore ensures complete flushing of the drug sample.

It is used to speed up microbial analysis of antibiotics and drugs containing bacteriostats in pharmaceutical API and formulation industries.

Key Applications

- Bio-burden testing of raw materials
- Bio-burden testing of product in API manufacturing

Grid Marked Cellulose Nitrate (GCN) Membrane Mixed Cellulose Ester (MCE) Membranes



GCN & MCE membrane disc filters are hydrophilic, non-media migrating, biologically inert and gridded membrane filters used for product and water microbiological studies.

The grid on the surface facilitates counting of bacterial colonies. We also provide presterilized GCN, MCE membrane in reel form.

Validated for sterility, microbial retention and inhibitory effect of ink grids on membrane filters, as per ASTM D4200-82

Key Applications

- Microbiological studies
- Counting of colonies



LAB & ANALYTICAL FILTRATION

Syringe Filters | Capsule Filters | Nylon Membranes

PureChrom® Disposable Membrane Syringe Filters

PureChrom® syringe filters contain a membrane disc filter sealed inside a polypropylene housing. These can be used for both aqueous and solvent based sample filtration applications.

We also provide syringe filters layered with a pre-filter for graded retention of colloidal particles associated with high turbid solutions. Pre-sterilized syringe filters with individual packing are also available.

Each syringe filter unit undergoes industry-standard validation procedures and QA/QC systems to ensure high quality and reliability.



Key Applications

- Filtration of organic solvents and chemicals
- Sample filtration for HPLC and other critical instruments

Types Available

- Nylon-66
- PTFE
- Microglassfiber
- Polypropylene
- PES
- Hydrophilic PVDF

Small Capsule Filters

(Ideal for Lab Water Purification Systems)

PoreCap® series of PES (Polyethersulfone) and Nylon capsule filters are ready-to-use sterile grade filtration devices available in a range of sizes and end connections options.



These filters are best suited for bioburden reduction and are manufactured in-house in ISO Class 8 cleanrooms.

- **Polyethersulfone (PES):** Offered in 0.1µm, 0.2µm and 0.45µm rating options, these filters offer fast flow rates and good chemical resistance.
- **Nylon (+ve charged):** Offered in 0.2µm and 0.45µm ratings, these filters provide an extra functionality of retaining smaller negatively charged particles such as endotoxins.

Key Applications

- Bioburden reduction
- Filtration of ultrapure water and lab water
- Sterilization of compatible solvents and chemicals
- Retention of endotoxins

Nylon-66 Membrane Filter (NN)



Nupore Nylon membrane disc filters are double-layered hydrophilic, non-media migrating, biologically inert, flexible and plain white absolute membrane filters which are useful for filtration of aqueous and organic solvents.

These are autoclavable membranes and offer absolute retention and wide chemical compatibility.

Key Applications

- HPLC sample filtration
- Mobile phase filtration



ENVIRONMENT FILTERS

PTFE Filter for PM2.5 | GlassFiber Filter Paper | Thimbles

Envipore PT for PM2.5



Nupore's high - purity **Envipore** PT2.0 Filters consist of PTFE Membrane with support ring and have individual numbering suitable for PM2.5 ambient air monitoring.

Micro-GlassFiber Thimbles Size: 19mmx90mm



Nupore Micro-Glass Fiber Thimbles are used for high temperature filtration (upto 500°C) or when the solvent is incompatible with cellulose thimbles.

Key Applications

- Sampling at ambient and elevated temperatures (Upto 500 °C)

Cellulose Thimbles Size: 28mmx100mm



Nupore Cellulose Thimbles are primarily used for dust sampling and in a soxhlet apparatus for extracting soluble compounds using organic solvents for the determination of fats and oils from foods, feeds, and oil seeds.

Key Applications

- Used in soxhlet apparatus for food analysis
- Dust sampling

Micro-GlassFiber Filter - GF/1



Nupore Micro-GlassFiber Filter Type GF/1 is manufactured from 100% pure borosilicate glass of special purity and is widely used for the routine monitoring of air pollution & for specialized monitoring of solid pollutants, micro organisms, oil and smoke air.

Key Applications

- Recommended for gravimetric determination of airborne particulate, stack sampling and absorption method of air pollution monitoring.

Micro-GlassFiber Filter - GF/2



Nupore Micro-GlassFiber Filter Type GF/2 is manufactured from 100% pure borosilicate glass of special purity enabling detailed chemical analysis of trace pollutants to take place with minimum interference or background.

Key Applications

- Developed and produced specially for use in high volume PM10 air sampling equipment that collects atmospheric particulate and aerosols.

Micro-GlassFiber Filter - GF/3

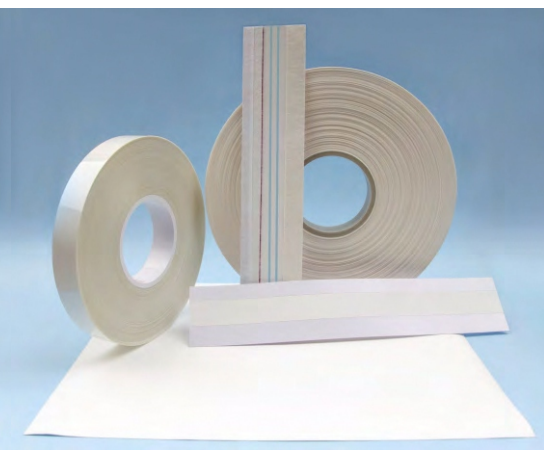


Nupore Micro-GlassFiber Filter Type GF/3 is manufactured from 100% pure borosilicate glass of special purity. It is used in water pollution monitoring.

Key Applications

- Used in Bio-chemistry for cell harvesting
- Binding assays
- Liquid scintillation counting
- Wastewater monitoring

DIAGNOSTIC MEMBRANES



Membranes For Lateral Flow Test: Highly consistent and optimized Nitrocellulose (NC) membranes for lateral flow tests. A wide variety of membranes are available in roll form as standard products to meet various needs. Membranes are directly cast on transparent polyester backing to improve the handling strength. Standard polyester film is 100µm thick, although other thickness can be available on order.



Rating	180	140	10µm	12µm	15µm	70
Wicking Rate (in Sec)	160-200	120-160	95-135	80-110	70-100	65-90



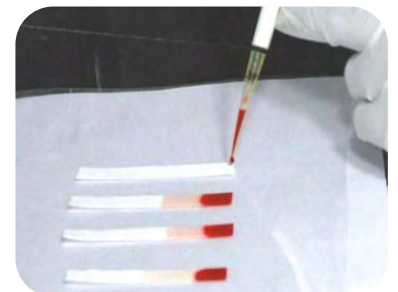
Laminates For Lateral Flow Test: A lateral flow test requires the NC membrane and other materials to be attached to a plastic backing. Laminates or cards are such ready-to-use subassemblies of membrane, adhesive and plastic. They are convenient to handle for application of reagents and are later cut into dipsticks to make the complete test kit.

Membranes For Immunofiltration: Immunofiltration membranes are specially useful for making antibody detection tests and also for quantitative detection of proteins. *Types Available :* FTCN is cast on cellulose paper. It is very sturdy to handle and the paper makes good contact with the absorbent. Available in sheets and reels of desired size. *Applications:* These are Paper cast NC Membrane FTCN - 0.45µm & 0.8µm that are mainly used in HIV1&2, HCV and other antibody tests and Microbial Detection kits.



Conjugate Release Matrix: Polyester matrix Type PT1-05 & PT2-05 are thick sturdy material. It acts as reservoir for conjugate and transfers the particles quickly to membrane. It has minimal additives so that user may include additives as per requirements. Polyester matrix of other thickness are also available on request.

Sample Pad: Glass fiber sample pad type GP-04 exhibits high absorption capacity and does not bind proteins. Available in standard thickness of 0.35mm and 0.6mm in sheet/strip/roll form. GP-04 has minimal additives, allowing a user to include additives as per requirement.



Blood Separator: Nupore produces Red Blood Cell separation material for Lateral Flow Test manufacturing industry.



RBS

Absorbent Pads (Sink Pads): Absorbent pads, located at downstream end of test, control the sample flow along the strip. These are hydrophilic in nature, have excellent absorbent capacity and thus help drive the flow. Nupore offers multiple variants to meet all the rapid test design (dipstick and device) requirements. Absorbent Pad SP-08 for cassettes is available pre-cut to desired length and width or in roll form.

VALIDATION SERVICES



Filter Integrity Test: Ensuring the integrity of your critical sterilizing filter is essential, so it should be tested both before and after use. Our team can assist you in identifying the minimum integrity test specification for 1) Filters wetted with your drug product or 2) Filters wetted and rinsed with a specific fluid.

Bacterial Retention Testing (BRT): This is a critical step in filter validation for biopharmaceutical manufacturers as it helps ensure that filters will produce a sterile effluent even when loaded with bacteria. Testing is conducted using end-user worst-case processing conditions to determine the ability of a sterilizing-grade filter to retain a minimum challenge of 10^7 bacteria per cm^2 of filter area.



Chemical Compatibility Test: Chemical Compatibility studies are performed to ensure that the filter undergoes no adverse effects on usage with the pharmaceutical product. These tests are performed on the filter prior to and after worst-case exposure. Compatibility is determined by comparing: Integrity test results using the reference fluid, Flow Rates, Membrane Thickness, Pore Morphology.



Throughput Study: During the prefiltration/filtration process, colloids or suspended particles start to accumulate on the filter membranes, leading to gradual pore plugging. It is important to understand the throughput capacity of the filter with respect to different filtrates.



Extractables & Leachables: The FDA defines the two terms as follows:

Extractables: Organic and inorganic chemical species that can be released from the surfaces of components used in the manufacture and storage of drug products under laboratory conditions (accelerated or exaggerated temperatures, solvents or surface exposure).

Leachables: Organic and inorganic chemical species that can be released from the surfaces of components used in the manufacture and storage of drug products under conditions of normal use.

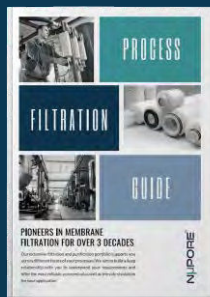
Our E&L study is made up of two separate but interrelated projects. The first is the extractables study, which establishes a baseline for the subsequent leachables study. The latter involves a series of tests carried out at predetermined intervals on the pharmaceutical product throughout its shelf-life.



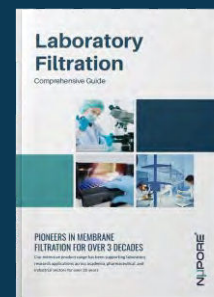
COMMITTED TO QUALITY & SAFETY

We aim to manufacture products that comply with global safety standards for Process Manufacturers. Our products are thoroughly tested & validated before being installed on your systems.

Our Detailed Catalogues



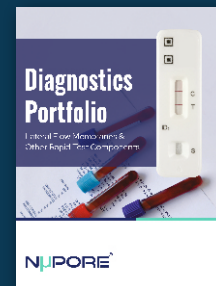
Process Filtration



Laboratory Filtration




BIOPAC Single Use Bags




Diagnostic Products

Founded in 1989, Nupore Filtration Systems manufactures a range of critical filtration membranes & devices and single use bags & assemblies. We operate through 3 manufacturing facilities in India and offer over 1,000 products catering to various applications across Pharmaceuticals, Diagnostics, Life Sciences Research, Biopharma, Microbiology and Food & Beverage verticals.

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