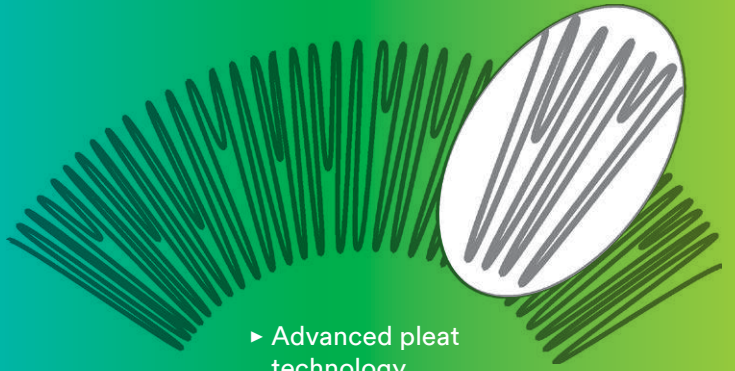


Consistency you can count on.

Innovative solutions to tackle your toughest filtration and dissolved gas control challenges.



▶ Advanced pleat technology

3M™ High Flow Filter

- ▶ Compound radial pleat design



3M™ Liqui-Cel™

- ▶ Membrane dissolved gas control technology



Improving efficiency and process effectiveness is our specialty.

When it comes to optimizing your process, you need just the right solution for the job. That is why customers around the world turn to 3M Filtration and Separation Solutions.

We understand the potential challenges many industries face on a daily basis, and we're constantly exploring new ways to help you overcome them. Because when your business operates at full capacity, you need filtration and dissolved gas control solutions that can keep up—and do so reliably.

Working with 3M, our customers have access to a global network of sales professionals, application engineering experts, and passionate teams driven to help with your challenges.

For more information, visit

[3M.com/Purification](https://www.3m.com/Purification)

or

[3M.com/Liqui-Cel](https://www.3m.com/Liqui-Cel)



Depth Filter Cartridges

Meet the needs of a variety of applications with an extensive line of cartridges in a cylindrical depth filter construction, featuring various materials, configurations and grades.



Absolute Rated — 3M™ Betapure™ Filters

- ▶ **AU & AUL Series**
Uniform porosity, rigid cartridges manufactured from thermally bonded polyolefin fibers for classification applications in fluids like coatings, specialty chemicals and electronics slurries.
- ▶ **NT-T Series**
Uniform porosity, polypropylene, wound non-woven cartridges featuring innovative design resulting in superior flow characteristics.
- ▶ **CMP Series**
Graded porosity, polypropylene, wound non-woven cartridges for classification applications like slurries.
- ▶ **SKY Series**
Graded porosity, polypropylene, wound non-woven depth filter for fine classification applications featuring 3M nanofibers for high filtration efficiency and flow rates.
- ▶ **CTJ Series**
Graded porosity, polypropylene, wound non-woven depth filter optimized for submicron fine classification applications, featuring 3M nanofibers for high filtration efficiency and flow rates.

Nominally Rated — 3M™ Micro-Klean™ Filters

- ▶ **RT Series**
Rigid polypropylene cartridges for water-based and other industrial fluid applications. Complies with FDA 21 CFR for food and beverage applications.
- ▶ **D Series**
Cotton or polypropylene string wound cartridges with integrated layers of non-woven filter media and multiple core options.



Surface Filter Cartridges

Extensive line of absolute-rated surface filter cartridges can provide advantages in various applications and are available in multiple materials of construction, configurations and grades.



Pleated Polypropylene — 3M™ Betafine™ Series Filters

- ▶ **D Series**
All polypropylene pleated non-woven cartridges provide cost effective filtration for demanding applications.
- ▶ **XL Series**
All polypropylene pleated non-woven cartridges utilizing 3M Advanced Pleat Technology (APT) resulting in optimized filter media utilization and extended filter life.
- ▶ **PBG Series**
Multi-layer polypropylene non-woven graded-porosity filter cartridges featuring APT to capture contaminant throughout the filter media to maximize filter life. Ideal for Food & Beverage Markets and high temperature sanitization.
- ▶ **PEG Series**
Multi-layer polypropylene non-woven graded-porosity filter cartridges featuring APT to capture contaminant throughout the filter media to maximize filter life. Suited for Electronics and other Industrial markets.

Pleated Membrane — 3M™ LifeASSURE™ Series Filters

- ▶ **IMC Series**
Nylon, multizone microporous membrane filters for critical industrial filtration applications.
- ▶ **EMC Series**
Nylon, multizone microporous membrane filters, pre-rinsed for high purity filtration in the electronics industry.

- ▶ **BA Series**
Nylon, single-zone microporous membrane filters for final filtration in Food & Beverage applications.
- ▶ **BLA Series**
Nylon, multizone microporous membrane filters for prefiltration in Food & Beverage applications, or as a final filter in non-critical applications.
- ▶ **BNA Series**
PES, highly asymmetric microporous membrane filters for final filtration in Food & Beverage applications.
- ▶ **BDA Series**
PES, dual-layer, asymmetric microporous membrane filters for sterile filtration in Food & Beverage applications.
- ▶ **EMZ Series**
Charge-modified nylon microporous membrane filters for fine contaminant control in microelectronics applications.
- ▶ **EPF Series**
PES, highly asymmetric microporous membrane filters for fine contaminant control in microelectronics applications.
- ▶ **MFE Series**
PTFE microporous membrane filters for contaminant control in aggressive chemicals.
- ▶ **PFS Series**
PTFE microporous membrane filters for sterile air/gas filtration.

Not all products may be available in every region. Please contact your local sales representative.

Charge Modified Filter Cartridges

Our full line of charge modified depth filters trap contaminants through depth straining, but also via electro-kinetic adsorption of particles smaller than the rated pore size. They're composed of cellulose, a variety of application specific filter aids and proprietary binding resins.



3M™ Zeta Plus™ Series Filters

▶ A Series

Designed for general industrial and utility applications requiring efficient filtration.

▶ Activated Carbon Series

Activated carbon containing filters capable of reducing trace organics, color, and other contaminants without the cleanup problems associated with bulk activated carbon.

▶ 40Q Series

Containing ion exchange resins, these filters are ideal for reducing trace levels of metallic ion contaminants from high purity chemicals, such as resins, photoresists and solvents.

▶ H/HT Series

Featuring very high tensile strength media, this series is well suited to most Food & Beverage applications where repetitive hot water flushing is common, as well as in demanding general industrial applications.

▶ MH/MHT Series

Two layers of high tensile strength media combined into a single filter offers increased throughput in Food & Beverage applications. The first, more open layer provides prefiltration while the tighter, second layer provides retention of finer contaminants.

▶ C Series

Designed to reduce haze in distilled spirits and other general industrial applications.

▶ S Series

General purpose series used to control turbidity and contaminating fine particulate in general industrial applications.

▶ U & UW Utility Series

Designed for high efficiency particle control in resins/insulating oils (U Series) or particle control with additional moisture reduction (UW Series) in insulating oils.



Large Diameter Cartridge Systems

Meet the needs of a variety of applications with an extensive line of large diameter filter cartridges available in multiple configurations, sizes and grades.



► High Flow Series

All polypropylene cartridges featuring one of two 3M high efficiency polypropylene microfiber media in a unique radial pleat configuration. Outside to inside flow geometry with large inner diameter supporting high flow applications such as pre-RO and other industrial process.

► HFR Series

Pleated polypropylene cartridges featuring 3M high efficiency microfiber media, with inside to outside flow pattern. This configuration allows for direct retrofit into many existing large diameter housing installations.

► 700 Series

All polypropylene cartridges featuring 3M high efficiency polypropylene microfiber media in a unique radial pleat configuration. Outside to inside flow geometry with high dirt holding capacity. Ideally suited for many refinery, oil & gas and industrial chemical applications.



Not all products may be available in every region. Please contact your local sales representative.

Bag Filters

A full line of bag filtration solutions in a variety of form factors supporting cost-effective filtration in a wide variety of industries.

Specialty Systems

Unique products with critical advantages in specialty applications, from fine chemical filtration, to fully-enclosed systems, to advanced metal ion reduction solutions.

Bag Products

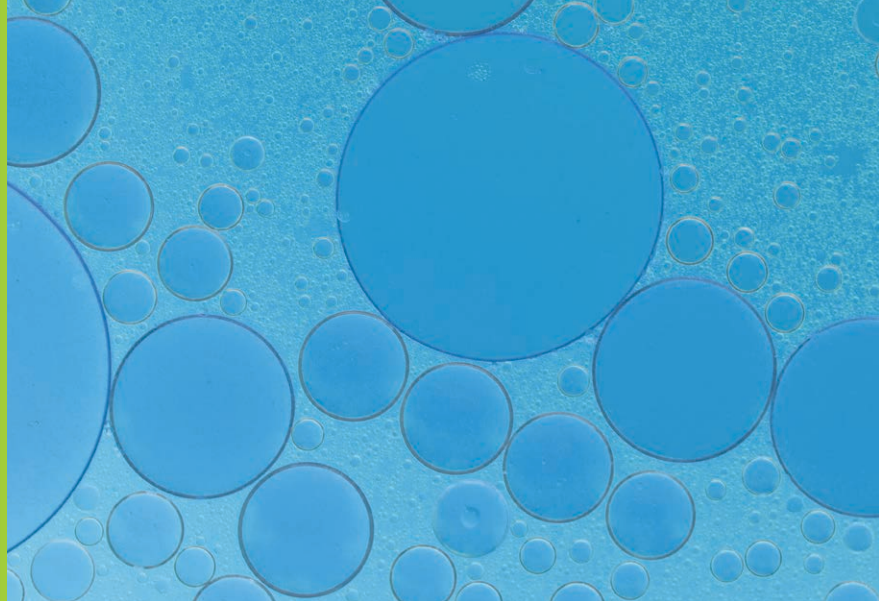
- ▶ **NB Filter Bags**
Nominally rated polypropylene and polyester felt and nylon monofilament nominally rated filter bags. Cost effective filtration for industrial, automotive and oil & gas applications.
- ▶ **DF Series**
Nominally rated, graded porosity polypropylene and polyester felt media in a unique two-cylinder design with high dirt holding capacities and up to five times the life of conventional nominally rated bags. Easily retrofittable for use in bag filter housing systems.
- ▶ **100 Series**
Single-layer, high efficiency, 3M polypropylene microfiber media in a bag configuration. Ideally suited for industrial applications requiring high particle removal efficiency, with the added benefit of oil contamination reduction.
- ▶ **500 Series**
Multi-layer, high efficiency. 3M polypropylene microfiber media in a unique wrapped bag configuration. High dirt holding capacity allows for much longer life than conventional filter bags.

Specialty Products

- ▶ **NanoSHIELD™ Hollow Fiber Series**
Absolute rated, polypropylene, nylon or polyethylene hollow fiber membrane filter cartridges designed for critical applications in the high purity electronics industries.
- ▶ **CUNO™ CTG-Klean Systems**
A totally enclosed filtration system designed to isolate the product being filtered from the filter housing. Available with 3M Industrial filter cartridges, and size configurations is ideally suited for applications where to that require reduced direct contact with contaminated filter, reduced system cleanup requirements and operator exposure.
- ▶ **Activated Carbon**
Activated carbon bed with integral polypropylene filtration inside a polyethylene shell for reduction of trace organics in industrial applications.
- ▶ **Metal Ion Purifier**
3M™ Metal Ion Purifiers are designed to reduce metal ions in high purity solvent systems to the sub 50ppt level. Utilizing 3M's immobilized particle technology, which is comprised of either a strong acid cation exchange resin or a chelating ion exchange resin in a polyethylene matrix, 3M Metal Ion Purifiers provide effective, single pass reduction of metal ions from high purity resins and solvents, such as PGMEA, TMAH, BARC, and other lithography chemistries.

Gas Transfer Membrane Contactors

In a compact design, 3M™ Liqui-Cel™ Membrane Contactors can add gases to or remove dissolved gases and bubbles from compatible liquid streams utilizing hollow fiber membrane technology.



3M™ Liqui-Cel™ Membrane Contactors

▶ EXF Series

Microporous polypropylene hollow fiber membrane contactors used to control dissolved gasses in mid- to high-flow rate water streams. Designed to enhance fluid flow dynamics, contactors maximize membrane utilization to strip dissolved gasses to ultralow levels in effectively designed systems.

▶ SP Series

Non-microporous, gas-permeable polyolefin hollow fiber membrane contactors commonly used to remove bubbles and dissolved gasses from liquids with low surface tensions. Membrane characteristics enable degassing and debubbling of compatible solutions containing surfactants or organic solvents.

▶ MM Series

Our smallest degassing (or debubbling) contactors, MM Series pack a high membrane surface area into a small footprint for low-flow rate applications. Commonly used in benchtop, laboratory, and analytical applications, degassing with these small, point-of-use contactors can improve measurement reliability, reduce rework, and improve product quality.



Not all products may be available in every region. Please contact your local sales representative.

Filter Housings

Our line of filter housings, for use in filtration applications, provides users quality, ease of use, flexibility and economy in ASME code, non-code and sanitary designs. From single cartridge housings to large multi-cartridge housings designed to handle flow rates in the thousands of gallons per minute, we provide solutions to meet even the most stringent process requirements.



3M™ Filter Housings — Single Cartridge

▶ 1B Series Filter Housings

These all metal, three-piece single cartridge housings with center-post, available in cast iron & steel, and 304SST, one high and two high designs.

▶ 1M Series Filter Housings

These all plastic, two-piece single cartridge housings constructed from high grade plastics provide broad chemical compatibility and durability.

▶ 1H Series Filter Housings

These all steel, high pressure design single cartridge housings are suitable for compressed air, gas applications and liquids.

▶ CT Series Filter Housings

These stainless-steel, three-piece single cartridge housings with ring nut closures are available in one-high, two-high or three-high designs.

▶ ZMS & ZVS Series

These all stainless steel, sanitary design single cartridge housings are available in T-style (ZMS) or in-line (ZVS) configurations, in one-high, two-high or three-high designs.

3M™ Filter Housings — Multiple Cartridge

▶ AL Series Filter Housings

These cost-effective cast iron and steel three-piece multi cartridge housings feature centerpost construction and stainless-steel internal components.

▶ DC & SS Series Filter Housings

These economical stainless-steel multi cartridge housings are available in a wide variety of sizes for applications that don't require ASME code design.

▶ ES Series Filter Housings

These ASME code-designed multi cartridge housings are available in a wide variety of sizes, materials, pressure ratings and choice of cartridge diaphragms.

▶ ZWB Series

These all stainless steel, sanitary design multi-cartridge housings available in a variety of configurations.





3M™ Large Diameter Cartridge Filter Housings

- ▶ **High Flow Series Filter Housings**
ASME code and non-code designed, single and multi-around housings are available in a variety of sizes to meet various flow capacities. Non-Code sanitary design is also available.

3M™ Zeta Plus™ Cartridge Filter Housings

- ▶ **ZPB Series Housings**
Sanitary design Zeta Plus housings in 8", 12" and 16" diameter, and a variety of configurations your application's needs.
- ▶ **P Series Industrial Zeta Plus Housings**
These all-metal housings designed for use with 12" Zeta Plus™ cartridges for a variety of industrial applications.

3M™ Bag Filter Housings

- ▶ **3M™ BHN Series Bag Housings**
These economical stainless-steel single round bag housings are available for applications that don't require ASME code design. Available with 3M DF or NB Series baskets.
- ▶ **DF Series Bag Housings**
These 316SS baskets are available in a number of lip configurations to retrofit into existing bag housings allowing use of DF Series elements.

Product data sheets are available for all 3M Filtration and Separation products. For additional information, please visit 3M.com/Purification, 3M.com/Liqui-Cel, or contact your local 3M Filtration and Separation representative.

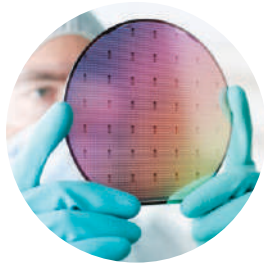
Not all products may be available in every region. Please contact your local sales representative.

Helping protect your products and equipment.

3M Filtration and Separation provides filtration solutions across a wide variety of markets and industries.



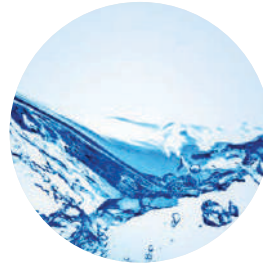
Food and Beverage



Microelectronics



Industrial Water Systems



Ultrapure Water



Power Generation



Waste Water Treatment



Paints and Coatings



Inkjet Printing



Upstream Oil and Gas



Refining



Chemicals



Automotive Assembly



Metalworking



Utilities



General Manufacturing

► Find your filtration solution at 3M.com/Purification.



3M Separation & Purification Sciences Division
10 Ang Mo Kio Street 65,
Techpoint #01-01
Singapore 569059
Tel: 6450 8888



Lim Kim Hai Electric Co (S) Pte Ltd
Lim Kim Hai Building,
53 Kallang Place, Singapore 339177
T (+65) 6292 3711 • (+65) 6490 5000
F (+65) 6297 0078
E customerservice@limkimhai.com.sg
W www.limkimhai.com.sg