

Inkjet Filtration

Custom Filtration Solutions
for the Inkjet Industry



Porvair Filtration Group

Porvair Filtration Group is an international leader in the development and supply of materials and products for applications in filtration and separation.

Porvair manufactures in the UK, USA and China and has an extensive network of sales offices and distribution channels throughout the world. Our expertise is wide and varied, with products used in markets such as:

- OEM
- Aerospace and Defence
- Food and Beverage
- Gasification
- Microelectronics
- Nuclear
- Pharmaceutical
- Printing
- Process

Our ongoing success is based on a dedication to technical excellence and superior customer service. Our future will be built on our investment in research and development to provide innovative new products that exceed the expectations of our customers in solving the challenges that they face.



Inkjet Market Sectors

- **Coding and Marking**
Variable data, barcoding.
- **Graphics**
Outdoor and indoor signage.
- **UV**
Outdoor and long-life applications signage.
- **Ceramics**
Floor and wall tiles.
- **Printhead Manufacture**
- **Digital labelling and narrow web**
High quality graphics with variable data and short runs.
- **Memjet**
New super-fast print applications.
- **3D**
Prototyping and one-off modelling.
- **Textiles**
Direct and indirect printing of materials.

Customer Support

- Work direct with our engineers to create original filtration devices.
- Lead times start at 8 weeks from final drawing approval to first off samples.
- PPAP support.
- Internal test facilities.
- Fast ramp-up times.
- Full traceability quality systems.
- Tailored 4 colour graphics / laser etching for product labelling.
- Large range of back-catalogue filters for immediate availability.
- Low start up quantities.



OEM Products

Filtration is a critical process within the digital inkjet fluid delivery system. The concept of a clean environment within the inkjet system is significant and the correct configuration of filtration is paramount. To ensure and maintain optimised printer performance, the print-head nozzles and systems architecture must be protected from environmental and system debris, fibres, gels, ink agglomerates, and contamination from degradation of by-products.

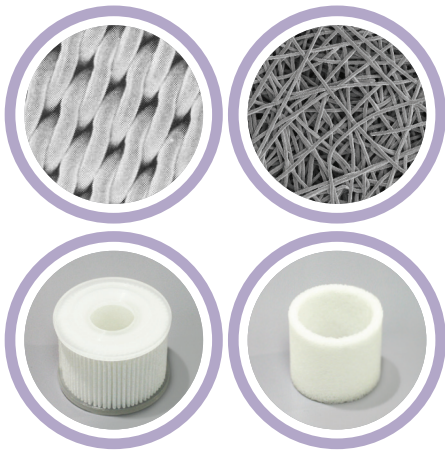
Alongside our standard range of inkjet filters, **Porvair Filtration Group** is able to provide full technical support to OEM partners for the conception, engineering and manufacture of custom designed filtration solutions for all inkjet system architectures.

Porvair's philosophy of building strong relationships with our partners enables us to better understand business needs and react to supply the optimum custom designed product for this challenging market sector.








The technical team at our primary facility in the UK is positioned to offer total engineering support to our customer base through design, manufacturing and education in filtration. This is strongly backed up by our US facility in Ashland, Virginia, USA.

Filter Media Options






A variety of filtration media is offered to suit the application, these include; polypropylene, nylon, stainless steel mesh and metal fibre. Other materials available on request.



Connector Options (Capsule)

Connector	Inlet/Outlet Styles
	1/4" to 3/8" barb
	1/4" NPT (male)
	CR
	Jaco® 40-6mm-6 90° (elbow) 6mm tube
	Jaco® 10-6mm-2 male connection 6mm tube
	Luer
	90° (elbow) Luer

Connector Options (In-Line)

Connector	Inlet/Outlet Styles
	2.6mm, 4.6mm and 6.5mm barb
	7/16" 20 UNF thread
	5/16" 24 UNF thread
	Luer
	3mm and 6mm Jaco®

Inkjet Fluid Process Schematic

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Capsule Filters

The main system filter is specifically designed for the requirement of digital inkjet printer filtration. The self-contained unit is designed around an all-polypropylene construction with no binding agents, to give low extractables and ensure 100% compatibility with inkjet fluids. All capsule filters are available for standard solvent and UV ink systems.

- Capsule filters are pressure tested to guarantee capsule integrity
- All filter housing is high grade polypropylene
- An integrated Vyon® core gives added security
- Operating temperature from 0°C to 50°C (32°F to 122°F)
- 6bar (87psi) operating pressure
- Optional filter materials.

Features and benefits

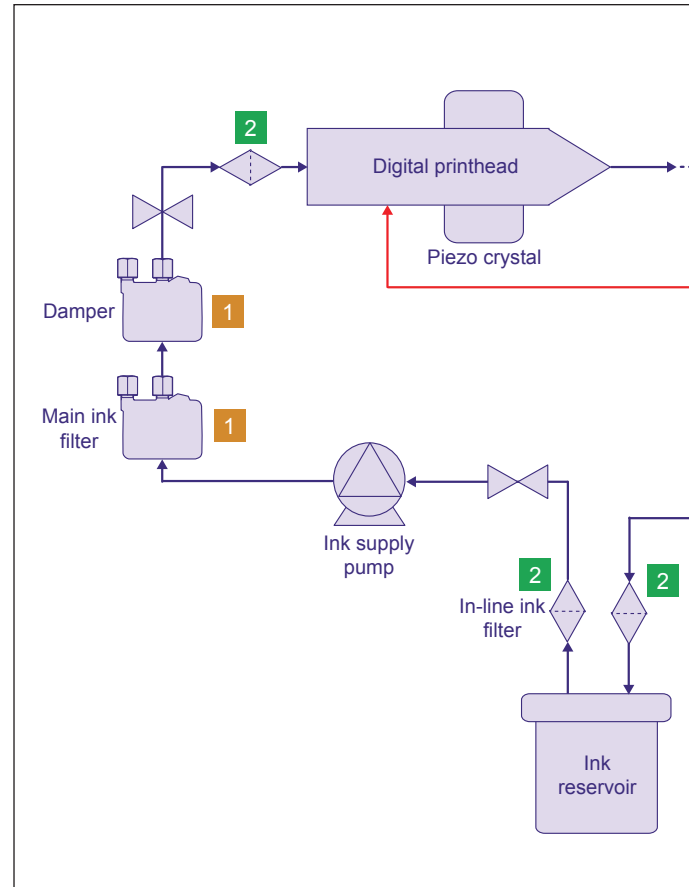
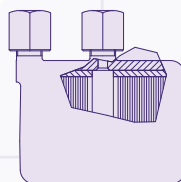
- High throughput
- Multiple connectors
- UV and solvent ink compatible
- Large active filter area
- Low pressure drop
- Excellent particle retention
- General Information.

Filtration Technology

The filters are manufactured using a range of different materials and design characteristics that comply to the latest quality systems. Pleated polymeric membranes are engineered as the principal barrier to any foreign bodies or aggregates.

An integrated secondary level of protection is added through an innovative design and the utilization of Vyon® as a central column filter. Vyon®, a co-sintered solid-state separation material, is manufactured from an ultra-pure, highly modified polymeric material with the lowest levels of particulates and extractables.

Capsule Filter



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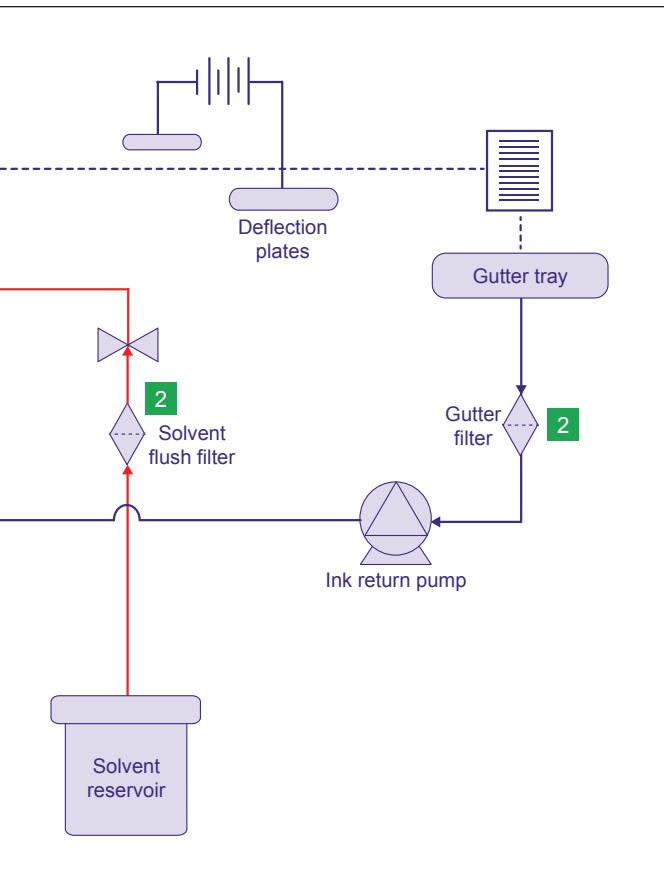
In-Line Filters

We design and manufacture a wide range of in-line and last chance filters to offer solutions for inkjet filtration throughout the body of the printer. These self-contained filter assemblies are provided as solutions for all types of inkjet applications from CIJ coding to superwide graphics.

Our filter assemblies are produced from a list of inert materials with minimal extractables to ensure ink will not be contaminated. They are compact to allow fitting in the smallest of printer housing, and are available with a range of connectors.

Features and benefits

- Wide range of filtration options
- High flow differential strength
- Wide operating temperature range.

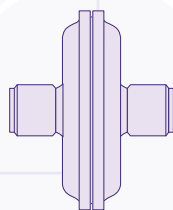


Filtration Technology

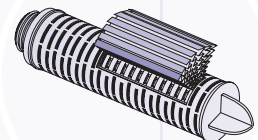
Filters are manufactured utilising a host of different materials. Polymeric membranes, stainless steel mesh and metal fibre are all offered within the product range. All filters will provide barriers to foreign bodies or aggregates within the ink system.

Where air filters are used, hydrophobic membranes of 0.2µm are offered as standard. This ensures dirty air and liquids are cleared from the system.

Disc Filter



Bulk Ink Filter



Bulk Ink Filters

Porvair supplies Polyfil™, Klearfil™ and Tekfil™ as a complete range of 10" module filter cartridges for the manufacture of bulk inkjet fluid. These pleated and meltblown polypropylene cartridges are based on a robust all polypropylene construction, offering removal ratings from 0.5µm to 75µm. Suitable for the filtration of aqueous and solvent based inks, Polyfil™, Klearfil™ and Tekfil™ cartridges can be used as pre-filters, series filters or final filters in the manufacture of bulk inkjet fluid.

All filters have excellent chemical compatibility characteristics and have no surfactants or bonding agents to minimise extractables, and are manufactured in an ISO cleanroom.

Features and benefits

- High degree of chemical compatibility.
- Fusion bonded construction ensures cartridge integrity.
- Environmentally friendly, can be readily incinerated to trace ash.

Filtration Technology

A combination of up to 8 separate filter layers provides true depth filtration. The multi-layer media structure provides pre-filtration prior to the absolute rated final layers and the inherent structural stability prevent channelling and avoids the risk of particle unloading.

Efficient through-flow is achieved with the combination of irrigation mesh and drainage material alongside the multiple layers of filter media.

All cartridges are validated using the recognised industry standard modified OSU-F2 single pass test to Beta 5000 (99.98% efficiency). FDA approved material is used on all bulk filtration assemblies.

Product Innovation, Manufacturing, Testing and Quality

Porvair Filtration Group has a policy of continuous improvement in all areas of its business. Listening to the customers' present and future requirements is a vital part of our operations and a key part of driving change.

Quality

Quality is at the heart of every stage of our operation and a fundamental part of our process. We are ISO9001 approved at all of our manufacturing facilities and hold many other accreditations for the various industries we serve.

Our policy is to provide products and services that consistently satisfy the commitments made to our customers by complying with their requirements, working together as a team and by achieving continual improvement in our skills, systems, processes and performance.

We have a dedicated team of quality professionals with many years' experience in definition, implementation and maintenance of quality management systems meeting multiple industry requirements. This extends across the workforce through a strong quality culture and a philosophy of 'getting it right first time', driven from the top of the organisation. Our quality management systems are regularly audited internally and by customers and regulatory bodies.

Development

Although **Porvair** operates across many filtration and separation markets, there is significant interaction between each division in terms of product research and development. The new product development team is drawn from scientists and engineers from across all divisions encouraging new ideas and new solutions.

Development plays a fundamental part in our operations and, as a result, we have developed a number of new bespoke products based on our established porous polymeric materials (Vyon®) and sintered metal media (Sinterflo®).

The success of this approach has been in the interaction of chemists and engineers working together to find practical solutions to some extremely complex scientific challenges identified in the chosen market areas.

Engineering

From initial concept design through manufacture and validation to in-service support, our highly experienced team of dedicated engineers work to develop the optimal filtration solution. Our team utilises the latest engineering tools of 3D AutoCAD®, Finite Element Stress Analysis, Computational Fluid Dynamics (CFD).

The ability to develop and modify multi-implosion tooling and our in-house moulding capabilities enables us to offer custom engineered filtration products that can be overmoulded with the media that best suits the customers' application. This is combined with our knowledge and strong ethos of working closely with our customers, ensuring filtration solutions that meet customers' requirements.



Manufacturing

We produce a range of digital inkjet filters and inkjet fluid management systems using a range of porous polymeric and stainless steel materials, at our various production sites. We manufacture for a wide range of digital printing and associated customers ranging from:

- Digital print head OEMs
- Systems integrators
- Inkjet technology houses
- Direct OEM printer manufacturers for CIJ, DoD and SoHo markets.

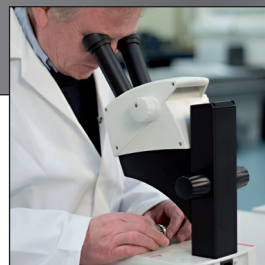
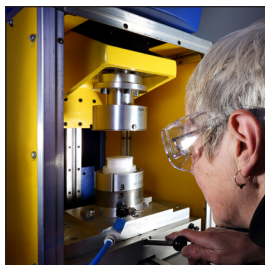
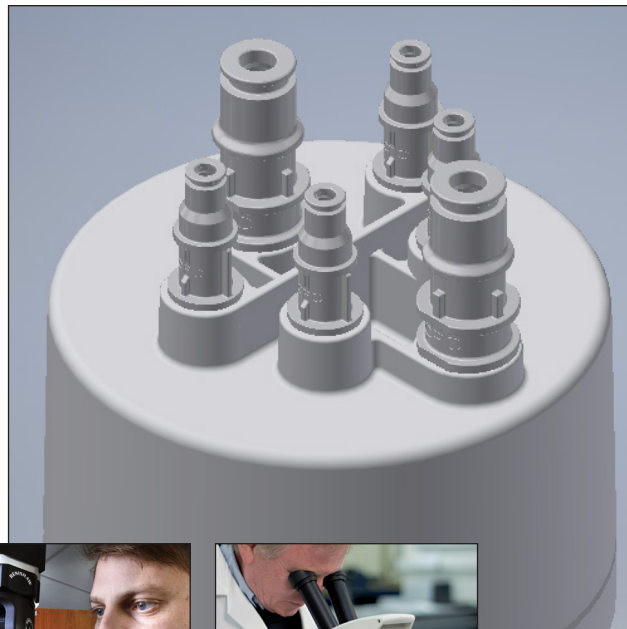
Our production capabilities include the development of inkjet capsule filters, last chance and in-line filters ink sump filters and filters for bulk ink manufacturing using spin and ultrasonic welding, infrared end capping, hot plate welding and overmoulding based on the OEM design specifications.

Testing and Laboratory

Our dedicated test, development and laboratory services underpin our design and development activity, from filtration media and material characterisation, product verification testing to customer systems simulation trials and in service performance evaluation. Our capabilities include filtration characterisation, testing and analysis of filter media, inks and solvents within the inkjet fluid management system.

Technical Support Services

- Validation services:
 - Systems filters specific validation
 - Filter compatibility
 - Retention studies and Filterability Index tests
 - Microbial challenge tests for food and pharmaceutical based inkjet applications
 - Upstream and downstream ink cleanliness testing
 - contamination characterisation using SEM and FTIR.
- On-site services for bulk ink manufacturing:
 - Customer plant surveys
 - Process filter optimisation
 - Trouble-shooting
 - Pre-inspection review.





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