

# PREVENTING NOZZLE BLOCKAGE THROUGH IMPROVED CHEMICAL COMPATIBILITY OF ON-BOARD GUARD FILTER



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PRODUCT	VALUE ADDED	CLIENT	APPLICATION	SECTOR
SupaSpun Capsule	Extended Lifetime & Preventing Printhead Blockage	Specialist Digital Ink Manufacturer	Filtration of Digital Printing Ink for Porcelain	Chemicals & Coatings

## THE PROBLEM

Ink specifically formulated for the decoration of stone and porcelain tiles brings specific challenges when it comes to filtration. To ensure adequate penetration of the metalised ink into the ceramic surface it is necessary to use a solvent based solution to help etch the surface and maximise the performance of the decoration. This provides a much higher quality finish in terms of appearance and service life.

We were approached for help by a manufacturer of this type of specialised digital ink. They were having problems with the consistent premature blocking of the printheads at their customers.



Typical Printhead Setup

Close inspection of the printhead nozzles revealed that they were not getting blocked by agglomerated pigments or gels from the ink but polypropylene particles being shed from the degrading filter.

When choosing the correct filter for this application there are 3 main performance criteria that are equally as important:

1. **Efficiency and cut-off characteristics:** Will the filter protect my printheads while maximising the throughput of colour pigment?
2. **Lifetime:** Good filtration efficiency with poor lifetime protects the printhead but is not viable in consumable costs.
3. **Compatibility:** The filtration materials must be able withstand long exposure to potentially aggressive solvents

The technical expertise of the filter manufacturer is paramount in ensuring all three of these performance criteria are addressed.

In this case, product which was not compatible with the process were installed.

## THE SOLUTION

The ink is a complex formulation of metallic pigments such as Ruthenium(Re) and Gold(Au) mixed with proprietary solvents and paraffins. Following analysis of the chemical formulation it was clear that the pleated polypropylene of the existing filter material would be severely degraded.

Filtration media in depth filters is comprised of small diameter continuous fibres that have a high surface area in contact with the fluid being filtered. This is ideal for filtration efficiency, but it also accentuates any chemical compatibility issues.

The solution was to move from polypropylene pleated media to a bespoke [SupaSpun Capsule](#) with meltblown depth filter construction manufactured from nylon.



Typical Pleated Filter Capsule

## THE RESULTS

The new capsules were subjected to rigorous acceptance testing including soak testing and qualification the printers. There was no sign of physical degradation of the nylon media and the testing on the printers proved that the blockage on the printheads was eliminated. Operational lifetime was extended from below one month to three months.

By solving this problem the manufacturer of the ink has been able to reduce the consumable costs of the filtration to their customers as well as eliminating costly refurbishment or replacement of printer heads.

## CONCLUSION

When selecting filtration products for complex applications such as digital ink it is extremely important to assess all aspects of the filtration process. In this case an oversight on chemical compatibility has caused significant resource and financial implications before eventually being solved by working with the right supplier.

If you would like to find out more on how [Amazon Filters](#) can help you with your digital ink filtration please get in touch.



<https://www.amazonfilters.com/industry/digital-ink>

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