

# NEOPHIL®

## Permanently hydrophilic membranes

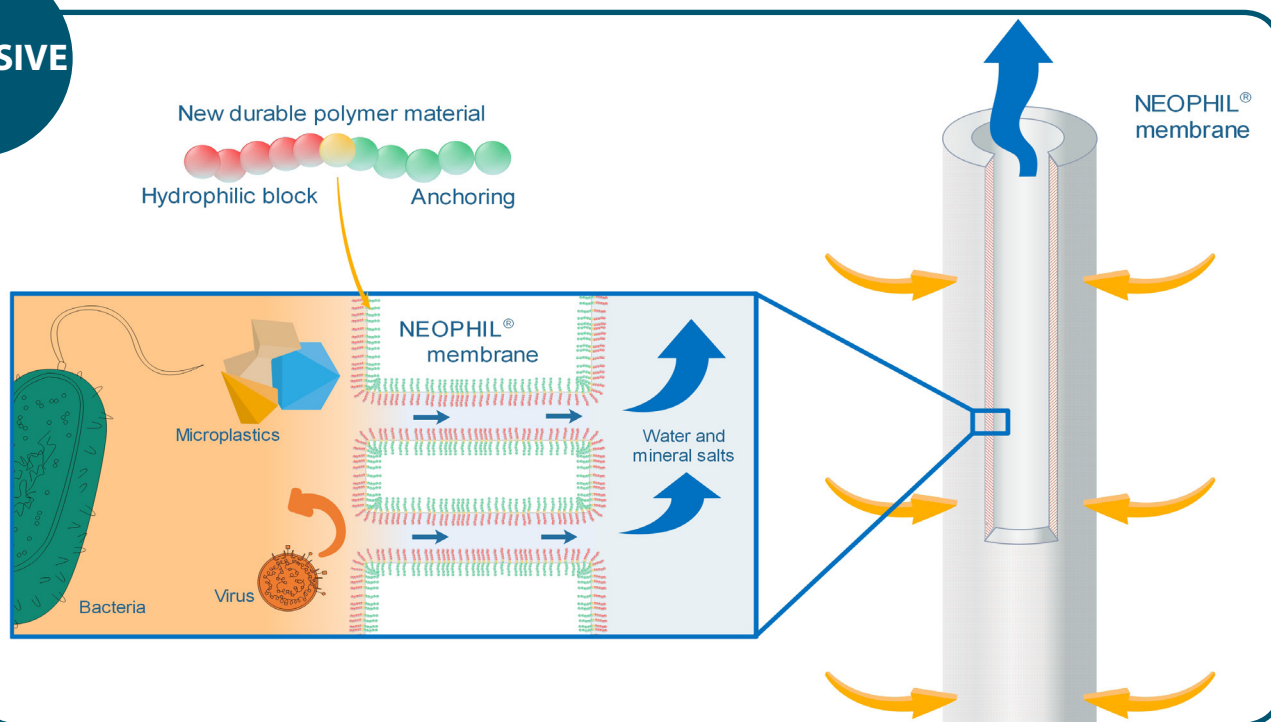
### The new generation of fluoropolymer hollow fiber membranes

Polymem, in partnership with Arkema, has developed the new generation of ultrafiltration membranes called NEOPHIL®, which is made from a uniquely modified PVDF. The modification is based on a proprietary block copolymer, which is solidly anchored within the Arkema Kynar® PVDF matrix and provides durable

hydrophilicity to the inner and outer membrane surfaces.

In addition, this modification's strong resistance to oxidation ensures that it will persist and be effective throughout the entire lifetime of the membrane.

EXCLUSIVE



NEOPHIL® is a registered trademark of Polymem

The NEOPHIL® membrane is the only hydrophilic ultrafiltration membrane that has durable hydrophilicity and consistent retention performance.

The polymeric materials making up the NEOPHIL® membrane consist of Kynar® PVDF and a copolymer anchored within the structure:

- Kynar® PVDF gives the microporous membrane both its chemical resistance to oxidants and its superior mechanical strength,
- The copolymer gives the membrane its permanent hydrophilic property and a stable porous structure.

#### The NEOPHIL® material is offering unique benefits

- **Resistance to Oxidants** (chlorine, ozone...)
- **High and permanent Permeability**
- **Excellent Mechanical Resistance** (Tensile force and Elongation at break)
- **Permanent Structure and surface Rejection**
- **BPA free, BPS free fiber membranes**

# NEOPHIL®

Permanently hydrophilic membranes

## A range of NEOPHIL® hollow fibers

Polymem designs and manufactures a range of NEOPHIL® hollow fibers that are designed for various applications: Ultrafiltration (standard S2F), Microfiltration (MFF) for disposable cartridges, supported NEOPHIL® for submerged MBR modules ... Ask us about your NEOPHIL® membrane application !

## Unique advantages



The benefits of PVDF, a material that has dominated the worldwide membrane market for water treatment since 2010, are now being complemented by Neophil's unique and superior qualities. In conventional membranes, the hydrophilizing additive (PVP, PEG, HEC, salts, etc) is leached out of the membrane's chemical structure during filtration and especially during chemical cleaning. This loss of hydrophilicity means that in order to produce a constant flow, these membranes will require more and more energy (pressure) and/or cleaning. In addition, the loss of the hydrophilizing additive results in a change in the structure of the membrane (marked by an increase in the average pore size) that effectively compromises the guaranteed level of rejection announced by the manufacturer for its new membranes.

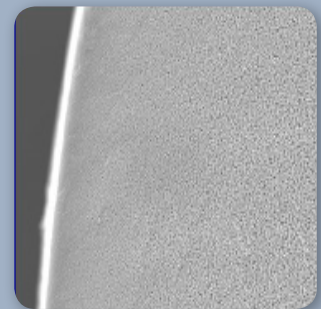
**Conversely, NEOPHIL® uses new amphiphilic, nanostructured diblock-copolymers composed of one hydrophilic block, which orients toward the filtration surface of the membrane, and one hydrophobic block, which is anchored deeply and permanently in the Kynar® PVDF polymer matrix (®Arkema). Neophil does not lose its hydrophilicity over time and maintains its rejection guarantee.**

## S2F Polymem standard NEOPHIL® fiber

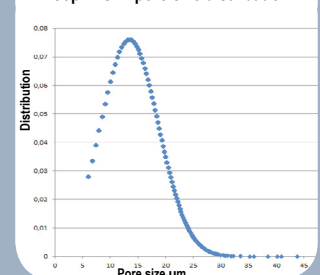
NEOPHIL® fiber with its hydrophilizing additive incorporated into the membrane material, is not subject to performance losses. Polymem's hollow fiber manufacturing process with NEOPHIL® generates very small pore sizes for retaining viruses, which is otherwise difficult to achieve with conventional PVDF.

### Exclusive benefits

- **Pore diameter : 0.015 µm** true UF membrane with a very narrow pore size distribution profile
- **High mechanical resistance**
- **Resistance to chlorine** (whatever the pH)
- **High hydrophilicity when new AND after ageing**
- **The permanence of hydrophilicity of NEOPHIL® ensures the control of energy and chemicals consumption over time.**
- Resistance to biodegradation
- **Bisphenol A and Bisphenol S free**

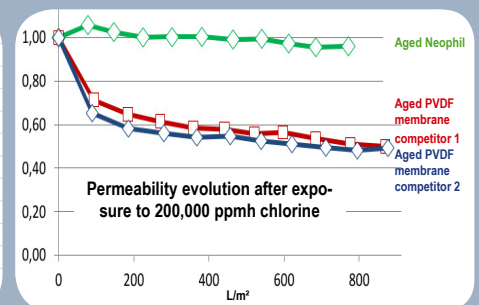
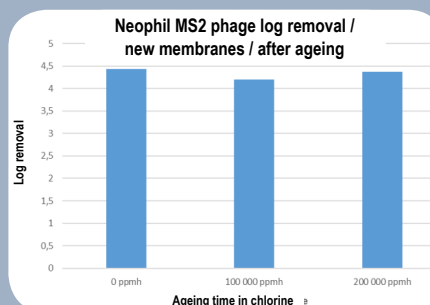


Neophil S2F pore size distribution



**The stability of the porous structure ensures the durability of excellent treatment performance and thus of virus rejection rate:**

Virus removal > 4 log on new fiber  
**AND**  
Virus removal > 4 log on aged fibers (exposed to 200 000 ppm.h chlorine)



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