



SOLVAY

asking more from chemistry®

High-Performance Polymers for
Durable Membranes

**SPECIALTY
POLYMERS**

Polymers for Microfiltration (MF), Ultrafiltration (UF), Nanofiltration (NF) and Reverse Osmosis (RO) Membranes

Solef® PVDF

- Easy to form MF membranes
- Excellent chlorine resistance
- Stable at pH levels from 1–11
- Global agency approvals
- Processable by DIPS and TIPS technology
- Excellent flowability of the powder
- Strict quality consistence lot by lot

Udel® PSU, Veradel® PESU and Radel® PPSU

- Excellent mechanical properties
- Easy to form MF and UF membranes
- Outstanding hydrolytic stability
- Stable at pH levels from 2–13
- Excellent caustic resistance
- Global agency approvals
- Processable by DIPS technology

Halar® ECTFE

- Outstanding chemical resistance from pH 1–14
- Processable by TIPS technology only

Algoflon® DF PTFE

- Suitable for manufacturing expanded PTFE membranes
- Outstanding chemical resistance
- Lightweight membranes with better uniformity
- Processable by Paste Extrusion and Stretching only

Technologies

Diffusion Induced Phase Separation (DIPS)

- The polymer is dissolved at 25–80 °C, then precipitated in a bath containing a non-solvent, typically water.

Thermal Induced Phase Separation (TIPS)

- The polymer is melted and blended with a plasticizer, then extruded into the desired shape and cooled; the plasticizer is removed with another solvent.
- Membranes manufactured by TIPS technology are free of macrovoids, have improved tensile properties and narrow pore size distribution.

Paste extrusion and stretching

- The polymer powder is blended with a lubricant, formed in a ram extruder, then calendered and uniaxially or biaxially stretched.

Applications

Water treatment membranes

- Support layer for reverse osmosis membranes (Udel® PSU)
- Membranes for reverse osmosis pre-treatment (Veradel® PESU, Solef® PVDF)
- Membrane bio-reactors for industrial and municipal wastewater (Solef® PVDF, Halar® ECTFE)
- Drinking water (Udel® PSU, Veradel® PESU, Solef® PVDF)
- Membranes for distillation (Halar® ECTFE, Algoflon® PTFE and Fluorolink® PFPE)

Hemodialysis

- Fine hollow fiber membranes for blood purification (Udel® PSU, Veradel® PESU)

Bio-pharma separation

- Filter cartridges for concentration and solution clarification (Veradel® PESU, Solef® PVDF, Algoflon® PTFE, Halar® ECTFE)
- Filters for syringes, bottles, funnels and stirred cells (Veradel® PESU, Solef® PVDF, Algoflon® PTFE, Halar® ECTFE)

Food & beverage processing

- MF and UF membranes for concentration and clarification of juice and dairy products (Udel® PSU, Veradel® PESU, Solef® PVDF)

Gas separation

Udel® PSU and Hyflon® AD are the materials of choice for:

- Production of O₂ and N₂ from air
- Carbon dioxide removal or sequestration
- Natural gas liquids removal and dehydration
- Hydrogen recovery from refinery wet gas and fuel gas streams
- Olefin/paraffin separations
- Solutions for hydrophobic membranes

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