

# Alfa Laval UF flat sheet membranes

## Flat sheet membranes for ultrafiltration – FS, RC and ETNA types

### Introduction

The basic technology behind cross-flow membrane filtration by Alfa Laval involves using a semi-permeable membrane to separate a liquid into two distinct streams.

Ultrafiltration (UF) allows salts, sugars, organic acids and smaller peptides to pass through the pores of the membrane, whereas proteins, fats and polysaccharides are retained.

Most of the Alfa Laval flat sheet membranes for ultrafiltration are based on polypropylene (PP) support material permitting an extended pH and temperature range.

### Applications

Alfa Laval flat sheet membranes for ultrafiltration are used for a wide range of high-sanitary processes in the food, beverage, dairy, biotech and pharmaceutical industries such as:

- concentration and purification
- clarification and fractionation
- extraction
- product recycling and recovery
- product and effluent upgrading

### Benefits

- available with different flux properties, molecular weight cut-off values and rejection capabilities
- suitable for a wide range of processes
- the same basic membranes available in flat sheet and spiral configurations
- available by the metre, as standard sheets or precut to fit into Alfa Laval plate-and-frame modules
- delivered with the necessary lock and passage rings
- developed and manufactured by Alfa Laval
- all materials in compliance with EU Regulation (EC) 1935/2004, EU Regulation 10/2011, EU Regulation (EC) 2023/2006 and FDA regulations (CFR) Title 21



### Membrane data

Alfa Laval UF flat sheet membranes are made of different polymer types based on a unique construction of either polyester (PET) or polypropylene (PP) support material which provides optimum cleaning conditions.

Membrane type	Support material	Characteristics	MWCO value
FS40PP	Polypropylene	Fluoro polymer	100,000
RC100PE	Polyester	Regenerated cellulose acetate	100,000
RC10PE	Polyester	Regenerated cellulose acetate	10,000
RC70PP	Polypropylene	Regenerated cellulose acetate	10,000
ETNA10PP	Polypropylene	Composite fluoro polymer	10,000
ETNA01PP	Polypropylene	Composite fluoro polymer	1,000



## Standard sizes

Membrane type	Sheets 20 x 20 cm	Alfa Laval module M10	Alfa Laval module M20	Alfa Laval module M37	Alfa Laval module M38	Alfa Laval module M39
FS40PP	100486	100327	100447	100712	100713	100896
RC100PE	543362	543363	543364	543365	543366	543367
RC10PE	537485	537486	536771	537487	537488	534809
RC70PP	100320	101101	100319	100651	100652	100894
ETNA10PP	100479	101132	100467	100833	100839	100891
ETNA01PP	100478	101131	100465	100831	100837	517704

Note: For other sizes, please contact Alfa Laval

## Recommended operating limits

Production	FS40PP / ETNA10PP / ETNA01PP	RC100PE / RC10PE / RC70PP
pH range (reference temperature 25°C)	1 – 11	1 – 10
Typical operating pressure, bar	1 – 10	1 – 10
Temperature, °C	5 – 60	5 – 60

Cleaning (3 hours per day)	FS40PP / ETNA10PP / ETNA01PP	RC100PE / RC10PE / RC70PP
pH range (reference temperature 25°C)	1 – 11.5	1 – 11.5
Pressure, bar	1 – 5	1 – 5
Temperature, °C	5 – 65	5 – 60

### Note:

- Washing procedure indicated on the cover of each membrane package must be strictly followed. Please consult the Alfa Laval cleaning instructions and water quality specifications.
- The use of oxidation agents and similar chemicals might influence the membrane performance over time.

## Important information

- New membranes must be cleaned prior to first use. Please see detailed instructions on the packaging of the product.
- The customer is fully responsible for the effects that any incompatible chemicals may have on the membranes.
- After initial wetting, the membranes must be kept moist at all times.
- If the operating specifications provided in this product description are not strictly followed, the limited warranty will be null and void.
- To prevent biological growth during system shutdowns, Alfa Laval recommends that membranes should be immersed in a protective solution.
- Avoid permeate-side back pressure at all times.
- Alfa Laval recommends using original lock rings/strips for installation of the membrane sheets on the plates.
- For storage conditions, please see Shelf life and storage document.
- For warranties, please see Flat sheet membrane warranty document.

## Operating guidelines

Alfa Laval recommends the following start-up procedure from standstill to operating condition:

- The unpressurized plant should be refilled with water.
- Feed pressure should be gradually increased over a 30–60 second time scale.
- Before initiating cross-flow at high permeate flux condition (start-up with high-temperature water) the set feed pressure should be maintained for 5–10 minutes.
- Cross-flow velocity at the set operating point should be gradually achieved over a period of 15–20 seconds.
- Temperature variations should be implemented gradually over a period of 3–5 minutes.
- Avoid any abrupt pressure or cross-flow variations on the membranes during start-up, shutdown, cleaning or other sequences in order to prevent possible damage.

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## How to contact Alfa Laval

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