



Flat Sheet Membranes

Nanofiltration and Reverse Osmosis Membranes

The range of nanofiltration and reverse osmosis membranes from Alfa Laval covers a broad spectrum of flux and rejection properties. The membranes are based on a unique construction of either polypropylene (PP) or polyester (PE) support material that provides optimum cleaning conditions

Alfa Laval flat sheet membranes are available by the metre, as standard sheets (size 20 x 20 cm), and of course in all Alfa Laval plate-and-frame configurations. All the materials used for the production of these membranes comply with FDA regulations (CFR) Title 21.

All Alfa Laval flat sheet membranes will be delivered with necessary lock and passage rings.

Designation	Characteristics	Rejection
Polyester support		
RO99	Thinfil composite	> 98%*
RO90	Thinfil composite	> 90%**
NF	Thinfil composite	> 98%***
Polypropylene support		
RO98pHt	Thinfil composite	> 97%*

* measured on 2000 ppm NaCl, 16 bar, 25°C

** measured on 2000 ppm NaCl, 9 bar, 25°C

*** measured on 2000 ppm MgSO₄, 9 bar, 25°C



Standard dimensions and part numbers

Membrane type	Standard sheets 20 x 20 cm	Alfa Laval Module M20	Alfa Laval Module M30
RO90	525517	525516	525518
RO99	522386	522369	524288
RO98pHt	100316	100457	100600
NF	517819	517820	517732

Other flat sheet sizes may be available - please contact Alfa Laval.

Recommended operation limits

Production

	RO99 / RO90	NF	RO98pHt
pH range	3-10	3-10	2-11
Typical operating pressure, bar	15-42	15-42	15-42
Maximum operating pressure, bar	55	55	55
Temperature, °C	5-50	5-50	5-60

Cleaning (3 hours per day)*

	RO99 / RO90	NF	RO98pHt
Pressure, bar	1-5	1-5	1-5
Temperature, °C	30-50 (86-122)	30-50	30-60
pH range	1.5-11.0	1.5-11.0	1.5-12.5
NaOH, %	<0.1	<0.1	<0.3
Na-EDTA, %	<0.2	<0.2	<0.2
Mineral acid, %	<0.2	<0.2	<0.2
Citric acid, %	<1.0	<1.0	<1.0

Note: The use of oxidation agents and similar chemicals might influence the actual membrane performance over time and agents such as chlorine are not allowed.

Sanitation (1 hour per week)

	RO99 / RO90	NF	RO98pHt
Hydrogen peroxide (ppm) at 25°C	<1,000	<1,000	<1,000

* Please consult the Alfa Laval "Water quality" PD leaflet, 1603.

Important information

New membranes must be cleaned prior to first use. The cleaning procedure should be in accordance with the instructions provided in the Alfa Laval cleaning description for the membrane type concerned. 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.

Operation guidelines

Avoid any abrupt pressure or cross-flow variations on the membranes during startup, shutdown, cleaning or other sequences, in order to prevent possible damage.

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 conditions (e.g. 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.

Alfa Laval reserves the right to change specifications without prior notification. ALFA LAVAL is a trademark registered and owned by Alfa Laval Corporate AB.

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How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information direct.