



# Sanitary Spiral Membranes for Ultrafiltration

## UF-pHt Series

The spiral elements for ultrafiltration are tailor-made for a range of processes, i.e. dairy, food, chemical, and pharmaceutical applications.

The elements are manufactured with polypropylene (PP) backing materials in a sanitary full-fit design offering optimum cleaning conditions. They are available in different combinations of length, diameter, spacer size and molecular weight cut-off value.

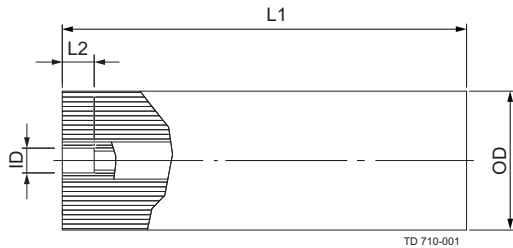
UF-pHt series	MWCO	Characteristics
GR40PP	100,000	Polysulphone/ polyethersulphone on polypropylene.
GR51PP	50,000	
GR60PP	25,000	Tolerant to high temperatures and pH values.
GR61PP	20,000	
GR70PP	20,000	
GR81PP	10,000	
GR95PP	2,000	

### Spiral membrane designation

GR61PP-6338/48		
GR61PP	=	Membrane type
63	=	Outer diameter of element (6.3")
38	=	Element length (38")
48	=	Feed spacer thickness

All materials comply with EU Commission Directive 2002/72/EC and FDA regulations (CFR), Title 21.





### Dimensions

- OD = outer diameter of element
- HD = nominal inner diameter of housing\*
- L1 = total length of element without ATD
- ID = diameter of ATD socket
- L2 = depth of ATD socket

\* For specific measurements of AL housings, please consult the product description

Element size	OD	HD	L1	ID	L2
	mm	mm	mm	mm	mm
2517	64.0-65.0	66.00	432	21.00	26.0
3833	95.0-96.5	97.55	838	21.00	26.0
3838	95.0-96.5	97.55	965	21.00	26.0
3938	98.5-99.0	100.00	965	21.00	26.0
4333	108.5-109.5	110.30	838	21.00	26.0
4336	108.5-109.5	110.30	910	21.00	26.0
4338	108.5-109.5	110.30	965	21.00	26.0
5838	146.5-148.5	150.00	965	28.90	50.0
6338	160.0-162.0	163.10	965	28.90	50.0
8038	198.5-201.5	204.14	965	31.15	50.0
8438	211.5-214.0	215.10	965	31.15	50.0

### Element configuration

Outer diameter	2.5"	3.8"	3.8"	3.9"	4.3"	4.3"	4.3"	5.8"	6.3"	8.0"	8.4"
Length	17"	33"	38"	38"	33"	36"	38"	38"	38"	38"	38"
Spacer size (mil)	30	30	30	30	30	30	30	30	30	30	30
	48	48	48	48	48	48	48	48	48	48	48
	-	80	80	80	80	80	80	80	80	80	80

Other element sizes may be available - please contact Alfa Laval.

### Typical cross-flow m<sup>3</sup>/h\* and max. pressure drop bar at cP 1

Outer diameter	2.5"		3.8"		3.9"		4.3"	
	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar
Spacer size 30 mil	0.9-1.1	0.5	6	1.1	6	1.1	7	1.1
48 mil	1.3-1.8	0.6	8	1.1	8	1.1	9	1.1
80 mil	-	-	11	1.1	11	1.1	12	1.1

Outer diameter	5.8"		6.3"		8.0"		8.4"	
	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar	m <sup>3</sup> /h	bar
Spacer size 30 mil	15	1.1	17	1.1**	18	0.9	25	0.8
48 mil	20	1.1	23	1.1**	25	0.9	30	1.0
80 mil	28	1.1	30	1.1**	30	1.1	35	1.1

\*Calculated at tight fit of spiral element and housing and by use of standard ATD system

\*\*During production at max 50°C: 1.3 bar

Recommended operation limits	pH range	Pressure	Temperature
		bar	°C
Production*	2-10	1-10	0-75
Cleaning**	1-13	1-4	0-70

\*Tolerant to wider pH ranges and higher temperatures under certain conditions - please consult Alfa Laval for specific requirements

\*\* Please consult Alfa Laval's cleaning description

### **Cleaning and disinfection limitations**

Caustic/chlorine

GR40 PP/GR51PP/GR61PP/GR81PP/GR95PP: 200 ppm at 50°C pH 10.5-11.0 Max. ½ h/day

GR60PP/GR70PP: 200 ppm at 50°C pH 10.5-11.0 Max. exposure: ppm x Hours < 25000 ppm Hours

### **Important information**

New spiral elements must be cleaned prior to first use. The cleaning procedure should be in accordance with the instructions of Alfa Laval's cleaning description for the spiral element type concerned. The customer is fully responsible for the effects of incompatible chemicals on spiral elements.

- Keep spiral elements moist all the time after first wetting.
- If the operating specifications given in this product description are not strictly followed, the limited warranty will be null and void.
- To prevent biological growth during system shutdowns, it is recommended that spiral elements be immersed in a protective solution.
- Avoid permeate-side back pressure at all time.
- Alfa Laval recommend using a rigid stainless steel ATD end device at the element housing outlet end, if pressure drop per housing exceeds 3 bars
- It is recommended that the inner diameter of the element housing be approx. 2 mm bigger than the outer diameter of actual spiral element.

### **Operation guidelines**

Avoid any abrupt pressure or cross-flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible damages.

A start-up procedure from standstill to operational condition is recommended as follows:

- 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 set operating point should be gradually achieved over 15-20 seconds.
- Temperature variations should be gradually controlled over 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**

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