



Alfa Laval UF-PET spiral membranes

Sanitary spiral membranes for ultrafiltration

Introduction

Cross-flow membrane filtration by Alfa Laval separates out the different components in a feed stream on the basis of the size and the shape of the micro-particles within it.

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.

Alfa Laval UF-PET spiral membranes are manufactured in a sanitary full-fit design that offers optimum cleaning conditions and minimized stagnant spaces.

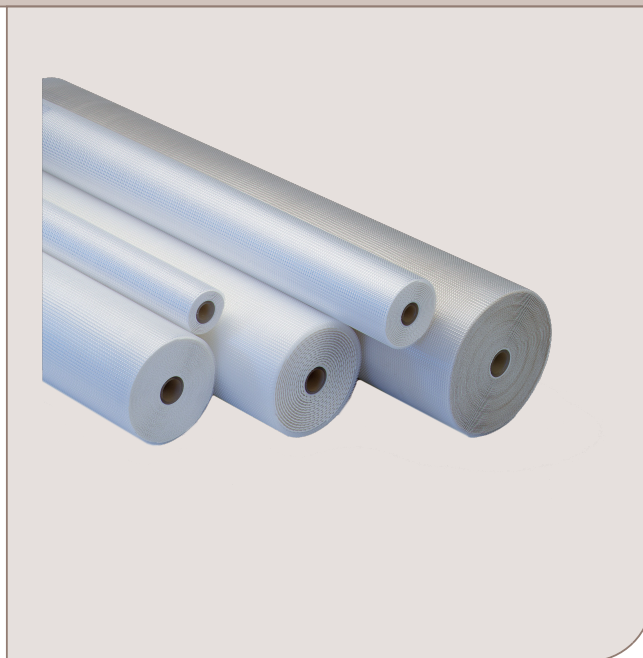
Applications

Alfa Laval spiral 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

- sanitary and compact full-fit design
- low initial investment and replacement costs
- cost-effective operation thanks to low energy consumption
- operation at low temperature possible
- different types and sizes available
- the same basic membranes available in spiral and flat sheet configurations (RC10PE)
- 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
- USDA approved (GR61PE, GR70PE).
- Halal certified (GR61PE, GR70PE, GR80PE, GR90PE)



Spiral membrane data

Alfa Laval UF-PET spiral membranes are based on a unique construction of a polymeric membrane with different characteristics and polyester (PET) support material.

Membrane type	Support material	Characteristics	MWCO value
GR61PE	Polyester	Polysulphone	20,000
GR70PE	Polyester	Polysulphone	20,000
GR80PE	Polyester	Polyethersulphone	10,000
RC10PE	Polyester	Regenerated cellulose	10,000
GR90PE	Polyester	Polyethersulphone	5,000

Spiral membrane designation

Example: Alfa Laval GR80PE-6338/48

Alfa Laval GR80PE	=	Membrane type
63	=	Outer diameter of spiral (6.3")
38	=	Length of spiral (38") without ATD system
48	=	Thickness of feed spacer (48 mil)

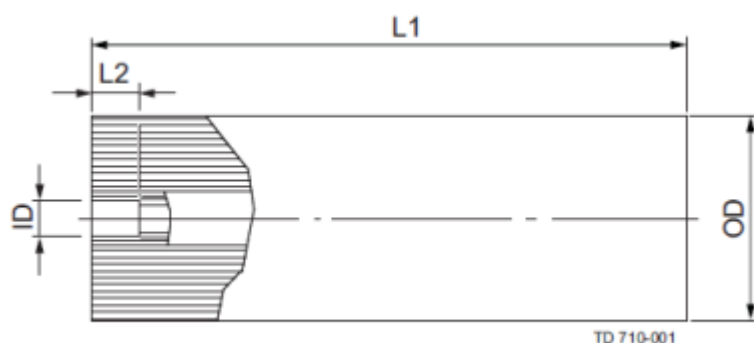
Standard configurations

Size ¹		UF-PET membrane type and code number ²				
Spiral	Spacer	GR61PE	GR70PE	GR80PE	GR90PE	RC10PE
2517	48	—	—	—	—	536783
2538	48	—	—	—	—	541045
3838	48	—	—	—	—	537478
	80	—	—	—	—	536818
6338	30	—	517824	533310	533324	—
	48	516697	517829	533311	533325	536867
	65	—	—	—	—	536779
	80	516742	517831	533312	533326	536819
8038 (id 28.9)	30	533293	533299	533313	533327	—
	48	533294	533300	—	533328	—
8338 (id 28.9)	80	533295	533301	533315	533329	—
	30	533296	533302	533316	533330	—
	48	533297	533303	533317	—	537553
	65	—	—	—	—	537552
	80	533298	533304	533318	533332	537554

¹ For other sizes, please contact Alfa Laval

² Please specify code number when ordering

Dimensions



OD = outer diameter of spiral membrane
 HD = nominal inner diameter of housing¹
 L1 = total length of spiral membrane without ATD
 ID = diameter of ATD socket
 L2 = depth of ATD socket

¹ For specific measurements of Alfa Laval housings please see the product specification

Standard sizes

Size ¹	Outer diameter (OD)		Housing diameter (HD)		Spiral length (L1) ²		ATD socket diameter (ID)		ATD socket depth (L2)	
	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
2517	64.0–65.0	2.52–2.56	66.0	2.60	432	17.01	21.10	0.83	50.0	1.97
2538	64.0–65.0	2.52–2.56	66.0	2.60	965	37.99	21.10	0.83	50.0	1.97
3838	95.0–96.5	3.74–3.80	97.55	3.84	965	37.99	21.10	0.83	50.0	1.97
6338	160.0–162.0	6.30–6.38	163.10	6.42	965	37.99	28.90	1.14	76.0	2.99
8038	198.5–201.5	7.82–7.93	204.14	8.04	965	37.99	28.90	1.14	76.0	2.99
8338	208.5–210.5	8.21–8.29	213.10	8.34	965	37.99	28.90	1.14	76.0	2.99

¹ For other sizes, please contact Alfa Laval

² Without ATD system

Cross-flow and pressure drop

Typical cross-flow (m³/h) and max. pressure drop (bar) at cP 1:

For GR61PE, GR70PE, GR80PE and GR90PE:

Outer diameter:	2.5"		3.8"		6.3"		8.0"		8.3"	
Spacer thickness:	m ³ /h	bar	m ³ /h	bar	m ³ /h	bar	m ³ /h	bar	m ³ /h	bar
30 mil	—	—	—	—	17	1.1	18	0.9	23	0.9
48 mil	1.3 — 1.8	0.6	8	1.1	23	1.1	29	0.9	32	0.9
80 mil	—	—	11	1.1	30	1.1	34	0.9	36	0.9

Note: Calculated at tight fit of spiral membrane and housing by use of standard ATD system

Maximum pressure drop across the entire housing not to exceed 4.1 bar

For RC10PE:

Outer diameter:	2.5"		3.8"		6.3"		8.3"	
Spacer thickness:	m ³ /h	bar	m ³ /h	bar	m ³ /h	bar	m ³ /h	bar
48 mil	1.5	0.5	8	1	21	1	29	0.9
65 mil	—	—	9	1	28	1	34	0.9
80 mil	—	—	12	1	31	1	38	0.9

Note: Calculated at tight fit of spiral membrane and housing by use of standard ATD system

Maximum pressure drop across the entire housing not to exceed 4.1 bar

Recommended operating limits

Production	GR61PE / GR70PE / GR80PE / GR90PE	RC10PE
pH range (reference temperature 25°C)	3 — 9	2 — 10
Typical operating pressure, bar	1 — 10	1 — 10
Temperature, °C	5 — 50	5 — 60

Cleaning ¹ (3 hours per day)	GR61PE / GR70PE / GR80PE / GR90PE	RC10PE
pH range (reference temperature 25°C)	1 — 11.5	1 — 11.5
Typical pressure, bar	1 — 4	1 — 4
Temperature, °C	5 — 55	5 — 65

¹ Please consult the Alfa Laval cleaning instructions and water quality specifications

Cleaning and sanitization limitations — caustic / chlorine

GR61PE:	<200 ppm at 50°C, pH 10.5–11.0, max. ½ hour per day
GR70PE, GR80PE, GR90PE:	<200 ppm at 50°C, pH 10.5–11.0, max exposure: ppm x hours <25000 ppm hours
RC10PE:	<20 ppm at 50°C, pH 10.5–11.0, max. ½ hour per day

Note:

- Washing procedure indicated on the cover of each spiral 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 spiral 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 spiral membranes.
- After initial wetting, the spiral 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 spiral membranes should be immersed in a protective solution.
- Avoid permeate-side back pressure at all times.
- Alfa Laval recommends using a rigid stainless steel ATD end device at the housing outlet end.
- Alfa Laval recommends that the inner diameter of the housing should be approx. 2 mm (0.08") bigger than the outer diameter of the spiral membrane.
- For storage conditions, please see Shelf Life and Storage document.
- For warranties, please see spiral 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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