

TEMPERATURE & PRESSURE CORRECTION

Temperature of the feed water and the net driving pressure across the element must be taken into account before comparing or evaluating the performance of a membrane element or a reverse osmosis system.

TEMPERATURE CORRECTION FACTOR

The water temperature is one of the key factors in the performance of the reverse osmosis membrane element. The higher the temperature, the more the product flow, and vice versa. All reverse osmosis membrane elements and systems are rated at 77° Fahrenheit (25° Celsius). To find the membrane permeate rate at a different temperature, follow these steps:

Find the temperature correction factor (TCF) from the below table. Divide the rated permeate flow at 77° Fahrenheit by the temperature correction factor. The result is the permeate flow at the desired temperature.

EXAMPLE

QUESTION: For a thin-film membrane permeate rated at 1800 gallons per day at 77° Fahrenheit, what is the actual permeate rate at 59° Fahrenheit?

ANSWER: Temperature correction factor (from below table) for 59°F = 1.47

Permeate flow at 59 degrees Fahrenheit = $1800 \div 1.47 = 1224$ gallons/day

Feed Water Temperature		TCF for Thin Film	TCF for CTA/CAB
°C	°F		
1	33.8	3.64	2.23
2	35.6	3.23	2.15
3	37.4	3.03	2.08
4	39.2	2.78	2.00
5	41	2.58	1.93
6	42.8	2.38	1.87
7	44.6	2.22	1.80
8	46.4	2.11	1.74
9	48.2	2.00	1.68
10	50	1.89	1.63
11	51.8	1.78	1.57
12	53.6	1.68	1.52
13	55.4	1.61	1.47
14	57.2	1.54	1.42
15	59	1.47	1.38
16	60.8	1.39	1.33
17	62.6	1.34	1.29
18	64.4	1.29	1.25
19	66.2	1.24	1.21
20	68	1.19	1.17
21	69.8	1.15	1.13
22	71.6	1.11	1.10
23	73.4	1.08	1.06
24	75.2	1.04	1.03
25	77	1.00	1.00

Feed Water Temperature		TCF for Thin Film	TCF for CTA/CAB
°C	°F		
26	78.8	0.97	0.97
27	80.6	0.94	0.94
28	82.4	0.91	0.91
29	84.2	0.88	0.89
30	86	0.85	0.86
31	87.8	0.83	0.83
32	89.6	0.80	0.81
33	91.4	0.77	0.79
34	93.2	0.75	0.76
35	95	0.73	0.74
36	96.8	0.71	0.72
37	98.4	0.69	0.71
38	100.4	0.67	0.68
39	102.2	0.65	0.66
40	104	0.63	0.65
41	105.8	0.61	
42	107.6	0.60	
43	109.4	0.58	
44	111.2	0.56	
45	113	0.54	
46	114.8	0.53	
47	116.6	0.51	
48	118.4	0.49	
49	120.2	0.47	
50	122	0.46	

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