Membrane Specific Flux at 20 °C and Fouling Loss

Temperature-corrected flux and specific flux of a membrane filter at two dates, and the percentage loss of permeability from fouling between them.

Input parameters

Unit system: SI

Parameter	Value	Unit
Flux at date 1	50.000	L/(m²·h)
Transmembrane pressure at date 1	0.80000	bar
Water temperature at date 1	4.0000	°C
Flux at date 2	70.000	L/(m²·h)
Transmembrane pressure at date 2	0.60000	bar
Water temperature at date 2	28.000	°C
Temperature correction base (per °C)	1.0300	
Standard temperature	20.000	°C

Calculated results

Parameter	Value	Unit
Flux at standard temperature, date 1	80.235	L/(m²·h)
Specific flux, date 1	100.29	
Flux at standard temperature, date 2	55.259	L/(m²·h)
Specific flux, date 2	92.098	
Loss of specific flux (fouling)	8.1724	%

Notes for this case

• Specific flux is in L/(m²·h·bar) at the standard temperature. The 1.03-per-degree correction follows the viscosity of water; a negative loss means the membrane is cleaner than at date 1.

Formula and method

$$J_s = J_m\,\theta^{(T_s - T_m)}, \quad J_{sp} = \frac{J_s}{TMP}$$

Variables

J_1	Flux at date 1	m/s
TMP_1	Transmembrane pressure at date 1	Pa
T_1	Water temperature at date 1	K
J_2	Flux at date 2	m/s
TMP_2	Transmembrane pressure at date 2	Pa
T_2	Water temperature at date 2	K
θ	Temperature correction base (per °C)	-
T_s	Standard temperature	K
$J_{s,1}$	Flux at standard temperature, date 1	m/s
$J_{sp,1}$	Specific flux, date 1	-
$J_{s,2}$	Flux at standard temperature, date 2	m/s
$J_{sp,2}$	Specific flux, date 2	-

ΔJ_{sp}	Loss of specific flux (fouling)	-

Method and standards

Empirical viscosity correction and specific flux.

Assumptions and limits

- Viscosity correction by a constant θ; valid roughly 5–30 °C.

Report details

Report reference	FCC-54GG-RMH7 (the same inputs always give the same reference)
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Calculator	Membrane Specific Flux at 20 °C and Fouling Loss
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/environmental/drinking-water/membrane-specific-flux-temperature

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.