Silt Density Index (SDI) of a Membrane Feed Water

Silt density index from the times to collect two equal volumes through a 0.45 µm filter at the start and end of a test, and the fouling class.

Input parameters

Unit system: SI

Parameter	Value	Unit
Time for the initial sample (e.g. 500 mL)	0.66667	min
Time for the final sample	1.2500	min
Total test time	15.000	min

Calculated results

Parameter	Value	Unit
Silt density index	3.1111	
Plugging over the test	46.667	%

Notes for this case

- SDI 3-5: fouling likely; pretreatment such as MF or UF is advisable.

Formula and method

$$SDI_T = \frac{100\left(1 - t_i/t_f\right)}{T}$$

Variables

t_i	Time for the initial sample (e.g. 500 mL)	s
t_f	Time for the final sample	s
T	Total test time	s
SDI_T	Silt density index	-
$\%P$	Plugging over the test	-

Method and standards

Silt density index.

Assumptions and limits

- Valid while plugging stays below about 75 %.

Report details

Report reference	FCC-8XKW-8MZ6 (the same inputs always give the same reference)
Generated	23 November 2026, 17:42 UTC
Calculator	Silt Density Index (SDI) of a Membrane Feed Water
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/wastewater/silt-density-index

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.