Coagulant and Chemical Solution Feed Rate

Chemical consumption and dosing pump flow for a coagulant or other chemical from the dose, water flow, product strength and solution density.

Method: Mass balance: product = dose × flow; solution = product/(strength × density)

Input parameters

Unit system: SI

Parameter	Value	Unit
Dose (as product)	30.000	mg/L
Water flow	500.00	m³/h
Solution strength (mass fraction of product)	10.000	%
Solution density	1,050.0	kg/m³

Calculated results

Parameter	Value	Unit
Product consumption	360.00	kg/d
Solution feed rate	142.86	L/h

Notes for this case

- Dose from jar tests; size the pump for the maximum dose and flow.

Formula and method

$$\dot{m} = d\,\dot{V}, \quad \dot{V}_s = \frac{\dot{m}}{w\rho}$$

Variables

d	Dose (as product)	kg/m³
$\dot{V}$	Water flow	m³/s
w	Solution strength (mass fraction of product)	-
ρ	Solution density	kg/m³
$\dot{m}$	Product consumption (shown per day by default)	kg/s
$\dot{V}_s$	Solution feed rate	m³/s

Method and standards

Mass balance.

Assumptions and limits

- Steady flow.

References

- Mass balance: product = dose × flow; solution = product/(strength × density)

Report details

Report reference	FCC-PT3F-64RY (the same inputs always give the same reference)
Generated	17 November 2026, 19:46 UTC
Calculator	Coagulant and Chemical Solution Feed Rate
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	2 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/coagulant-feed-rate

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.