Flocculant Dose and Solution Flow

Flocculant consumption per hour and per day and the dilute solution flow to the clarifier from the juice flow, the dose and the solution strength.

Method: Mass balance ṁ = V̇ c; solution flow = ṁ/(w ρ)

Input parameters

Unit system: SI

Parameter	Value	Unit
Juice flow	250.00	m³/h
Flocculant dose (mg per litre of juice) Per litre of juice, about ppm on juice. A dose in ppm on cane must be divided by the juice per cane (by volume) first.	3.0000	mg/L
Solution strength	0.10000	%

Calculated results

Parameter	Value	Unit
Flocculant per hour	0.75000	kg/h
Flocculant per day	18.000	kg/d
Solution flow (density 1000 kg/m³)	750.00	L/h

Notes for this case

- Dilute solutions (about 0.05–0.1 %) mix best; age the made-up solution before use.

Formula and method

$$\dot{m}_f = \dot{V}_j c, \quad \dot{V}_s = \frac{\dot{m}_f}{w\,\rho}$$

Variables

$\dot{V}_j$	Juice flow	m³/s
c	Flocculant dose	kg/m³
w	Solution strength	-
$\dot{m}_f$	Flocculant per hour	kg/s
$\dot{m}_{f,d}$	Flocculant per day	kg/s
$\dot{V}_s$	Solution flow (density 1000 kg/m³)	m³/s

Method and standards

Mass balance.

Assumptions and limits

- Solution density as water.
- The dose is per litre of juice. Doses quoted in ppm on cane must be converted with the juice-to-cane ratio before entry. No dose range is given here: find the optimum by jar tests.

References

- Mass balance ṁ = V̇ c; solution flow = ṁ/(w ρ)

Report details

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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/sugar-ethanol/clarification/flocculant-dose

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.