Cream Separator Fat Balance

Cream and skim milk flows from a separator from whole milk flow and the fat in milk, cream and skim, with the fat recovered in the cream (separation efficiency).

Method: Mass and energy balances (definitions): total and fat balances

Input parameters

Unit system: SI

Parameter	Value	Unit
Whole milk	20,000	kg/h
Fat in the milk	4.0000	%
Fat in the cream	40.000	%
Fat in the skim	0.050000	%

Calculated results

Parameter	Value	Unit
Cream	1,977.5	kg/h
Skim milk	18,023	kg/h
Fat recovered in the cream	98.874	%

Formula and method

$$\dot{M}_c = \dot{M}\frac{f_m - f_s}{f_c - f_s}, \quad \eta = \frac{\dot{M}_c f_c}{\dot{M} f_m}$$

Variables

$\dot{M}$	Whole milk	kg/s
f_m	Fat in the milk	-
f_c	Fat in the cream	-
f_s	Fat in the skim	-
$\dot{M}_c$	Cream	kg/s
$\dot{M}_s$	Skim milk	kg/s
η	Fat recovered in the cream	-

Method and standards

Total and fat balances.

Assumptions and limits

- Steady flow.

References

- Mass and energy balances (definitions): total and fat balances

Report details

Report reference	FCC-VE42-PS65 (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Cream Separator Fat Balance
Method last reviewed	13 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/chemical/food-dairy/cream-separator-balance

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.