Butter Yield and Overrun from Cream

Butter made from cream, the overrun over the fat churned and the buttermilk, from cream mass and fat, fat recovery and the fat content of butter.

Method: Fat balance of butter making; Tetra Pak; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Cream churned	2,000.0	kg
Cream fat	40.000	%
Fat recovered into butter	99.500	%
Fat content of the butter	82.000	%

Calculated results

Parameter	Value	Unit
Fat in the cream	800.00	kg
Butter made	970.73	kg
Overrun (butter over fat)	21.341	%
Buttermilk	1,029.3	kg
Fat lost to buttermilk	4.0000	kg

Notes for this case

• Butter holds the recovered fat plus water, salt and curd: butter = fat × recovery / fat content of butter. Overrun, the extra weight of butter over the fat churned, is typically 20–22 % for 82 % fat butter. Fat left in the buttermilk is the main loss; good churning keeps it below about 0.5 % of the fat.

Formula and method

$$m_b = \frac{m_c f_c r}{f_b}, \quad OR = \frac{m_b}{m_c f_c} - 1$$

Variables

m_c	Cream churned	kg
f_c	Cream fat	-
r	Fat recovered into butter	-
f_b	Fat content of the butter	-
m_f	Fat in the cream	kg
m_b	Butter made	kg
OR	Overrun (butter over fat)	-
m_{bm}	Buttermilk	kg
$m_{f,bm}$	Fat lost to buttermilk	kg

Method and standards

Butter yield.

Assumptions and limits

- Steady churning; composition as entered.

References

Fat balance of butter making, Tetra Pak, Dairy Processing Handbook (Tetra Pak Processing Systems, Lund)

Report details

Report reference	FCC-6VDC-KWYS (the same inputs always give the same reference)
Generated	23 November 2026, 18:00 UTC
Calculator	Butter Yield and Overrun from Cream
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/chemical/food-dairy/butter-yield-overrun

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.