Thin Stillage Backset and Syrup from Evaporation

Backset returned to mashing, the thin stillage sent to the evaporator and the syrup and water from concentrating it to a target solids.

Method: Split and solids balance

Input parameters

Unit system: SI

Parameter	Value	Unit
Thin stillage	30.000	t/h
Backset share	35.000	%
Solids in thin stillage	7.0000	%
Solids in syrup	32.000	%

Calculated results

Parameter	Value	Unit
Backset to mashing	10.500	t/h
To evaporator	19.500	t/h
Syrup	4.2656	t/h
Water evaporated	15.234	t/h

Notes for this case

- Too much backset builds up salts and organic acids that slow fermentation.

Formula and method

$$\dot{m}_b = \dot{m}_t b, \quad \dot{m}_s = \dot{m}_t (1 - b) \frac{x_1}{x_2}$$

Variables

$\dot{m}_t$	Thin stillage	kg/s
b	Backset share	-
x_1	Solids in thin stillage	-
x_2	Solids in syrup	-
$\dot{m}_b$	Backset to mashing	kg/s
$\dot{m}_e$	To evaporator	kg/s
$\dot{m}_s$	Syrup	kg/s
$\dot{m}_v$	Water evaporated	kg/s

Method and standards

Balance.

Assumptions and limits

- Steady state.

References

- Split and solids balance

Report details

Report reference	FCC-BD1A-TFXD (the same inputs always give the same reference)
Generated	17 November 2026, 19:45 UTC
Calculator	Thin Stillage Backset and Syrup from Evaporation
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/sugar-ethanol/ethanol/thin-stillage-backset

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.