Evaporation Needed from Juice Brix to Syrup Brix

Syrup produced and water to evaporate from the clear juice flow and the brix of clear juice and syrup (solids balance).

Method: Solids balance $\dot{m}_1\ Bx_1 = \dot{m}_2\ Bx_2$

Input parameters

Unit system: SI

Parameter	Value	Unit
Clear juice flow (by mass)	255.00	t/h
Clear juice brix	14.500	%
Syrup brix	65.000	%

Calculated results

Parameter	Value	Unit
Syrup	56.885	t/h
Water evaporated	198.12	t/h
Evaporation % juice	77.692	%

Formula and method

$$\dot{m}_s = \dot{m}_j \frac{Bx_1}{Bx_2}, \quad E = \dot{m}_j - \dot{m}_s$$

Variables

$\dot{m}_j$	Clear juice flow (by mass)	kg/s
Bx_1	Clear juice brix	-
Bx_2	Syrup brix	-
$\dot{m}_s$	Syrup	kg/s
E	Water evaporated	kg/s
$E/\dot{m}_j$	Evaporation % juice	-

Method and standards

Solids balance.

Assumptions and limits

- No solids lost.
- The juice flow is by mass. A flowmeter reading in m³/h must be multiplied by the juice density (about 1.06 t/m³ at 15 brix) first, or the evaporation is understated by about 6 %.

References

- Solids balance $\dot{m}_1\ Bx_1 = \dot{m}_2\ Bx_2$

Report details

Report reference	FCC-65Q7-8CFP (the same inputs always give the same reference)
Generated	17 November 2026, 19:36 UTC
Calculator	Evaporation Needed from Juice Brix to Syrup Brix
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/evaporation/evaporation-brix-balance

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.