Decanter: Wet Cake and Thin Stillage from Whole Stillage

Wet cake and thin stillage from a decanter centrifuge by a two-stream solids balance from the whole stillage flow and the solids of each stream.

Method: Two-product solids balance

Input parameters

Unit system: SI

Parameter	Value	Unit
Whole stillage	40.000	t/h
Solids in whole stillage	13.000	%
Solids in wet cake	33.000	%
Solids in thin stillage	7.0000	%

Calculated results

Parameter	Value	Unit
Wet cake	9.2308	t/h
Thin stillage	30.769	t/h
Solids captured in cake	58.580	%

Formula and method

$$\dot{m}_c = \dot{m}_f \frac{x_f - x_t}{x_c - x_t}, \quad \dot{m}_t = \dot{m}_f - \dot{m}_c, \quad \eta_s = \frac{\dot{m}_c x_c}{\dot{m}_f x_f}$$

Variables

$\dot{m}_f$	Whole stillage	kg/s
x_f	Solids in whole stillage	-
x_c	Solids in wet cake	-
x_t	Solids in thin stillage	-
$\dot{m}_c$	Wet cake	kg/s
$\dot{m}_t$	Thin stillage	kg/s
η_s	Solids captured in cake	-

Method and standards

Solids balance.

Assumptions and limits

- Steady state.

References

- Two-product solids balance

Report details

Report reference	FCC-6FB6-J0R9 (the same inputs always give the same reference)
Generated	17 November 2026, 19:48 UTC
Calculator	Decanter: Wet Cake and Thin Stillage from Whole Stillage
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/decanter-stillage-split

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.