Molasses Dilution to Mash Brix

Water to dilute molasses to a mash brix, the mash produced and its volume, by a solids balance on brix.

Method: Solids (brix) balance

Input parameters

Unit system: SI

Parameter	Value	Unit
Molasses	435.00	t/d
Molasses brix	86.000	%
Mash brix	25.000	%
Mash density	1,105.0	kg/m³

Calculated results

Parameter	Value	Unit
Dilution water	1,061.4	t/d
Mash	1,496.4	t/d
Mash volume	1,354.2	m³/d

Notes for this case

- Part of the dilution can be recycled spent wash or polished condensate in ZLD plants. The balance treats all dilution as solids-free water: recycled spent wash carries its own solids, so with it the mash brix comes out above the target.

Formula and method

$$\dot{m}_m = \dot{m}_M \frac{Bx_M}{Bx_m}, \quad \dot{m}_w = \dot{m}_m - \dot{m}_M$$

Variables

$\dot{m}_M$	Molasses	kg/s
Bx_M	Molasses brix	-
Bx_m	Mash brix	-
ρ_m	Mash density	kg/m³
$\dot{m}_w$	Dilution water	kg/s
$\dot{m}_m$	Mash	kg/s
$\dot{V}_m$	Mash volume	m³/s

Method and standards

Solids balance.

Assumptions and limits

- Brix conserved.
- The dilution is solids-free water. Recycled spent wash carries dissolved solids that this balance does not count, so the mash brix would exceed the target.

References

- Solids (brix) balance

Report details

Report reference	FCC-5TKF-KXD2 (the same inputs always give the same reference)
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Calculator	Molasses Dilution to Mash Brix
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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/molasses-dilution

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.