Brewhouse Extract and Yield

Extract in the cast-out wort from volume, °Plato and specific gravity, and the brewhouse yield against the malt's laboratory extract (as-is basis).

Method: Definitions and mass and energy balances: °Plato is extract as % by mass; water density 998.2 kg/m³ at 20 °C

Input parameters

Unit system: SI

Parameter	Value	Unit
Malt (grist) mashed	10,000	kg
Laboratory extract of the malt (as is)	78.000	%
Hot wort volume cast out	60.000	m³
Wort strength (°Plato = % extract by mass)	12.000	%
Specific gravity of the wort (20/20 °C)	1.0484	
Hot-to-cold volume factor	0.96000	

Calculated results

Parameter	Value	Unit
Extract in the wort	7,233.5	kg
Brewhouse yield (extract on malt)	72.335	%
Brewhouse efficiency (vs laboratory extract)	92.737	%

Notes for this case

- Good brewhouses recover 97–99 % of laboratory extract; mash filters reach the top of the range.

Formula and method

$$E = V k_h \cdot SG \cdot \rho_w \cdot {}^\circ P, \quad Y_{BH} = \frac{E}{M_m}, \quad \eta = \frac{E}{M_m E_L}$$

Variables

M_m	Malt (grist) mashed	kg
E_L	Laboratory extract of the malt (as is)	-
V	Hot wort volume cast out	m³
${}^\circ P$	Wort strength (°Plato = % extract by mass)	-
SG	Specific gravity of the wort (20/20 °C)	-
k_h	Hot-to-cold volume factor	-
E	Extract in the wort	kg
Y_{BH}	Brewhouse yield (extract on malt)	-
η	Brewhouse efficiency (vs laboratory extract)	-

Method and standards

Extract balance.

Assumptions and limits

- SG measured at 20 °C. °Plato and SG fix each other; a note appears when they disagree by more than 0.002 in SG (common Plato–SG relation), and when the efficiency exceeds 100 %.

References

- Definitions and mass and energy balances: °Plato is extract as % by mass; water density 998.2 kg/m³ at 20 °C

Report details

Report reference	FCC-PVRP-GWCC (the same inputs always give the same reference)
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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/chemical/food-dairy/brewhouse-extract-yield

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.