# Massecuite Quantity and Pan Strikes for a Sugar Output

Massecuite to boil for a sugar output from its crystal content, its volume from the massecuite density, and pan strikes per day for a pan capacity.

**Method:** Crystal balance ṁ_m = ṁ_S/c_m; volume by density

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Sugar from this massecuite | 25.000 | t/h |
| Crystal % massecuite | 50.000 | % |
| Massecuite density | 1,500.0 | kg/m³ |
| Pan capacity (strike volume) | 60.000 | m³ |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Massecuite | 50.000 | t/h |
| Massecuite volume | 33.333 | m³/h |
| Strikes per day | 13.333 | |

## Formula and method

$$\dot{m}_m = \frac{\dot{m}_S}{c_m}, \quad \dot{V}_m = \frac{\dot{m}_m}{\rho_m}, \quad N = \frac{86400\,\dot{V}_m}{V_p}$$

### Variables

| | | |
|---|---|---|
| $\dot{m}_S$ | Sugar from this massecuite | kg/s |
| $c_m$ | Crystal % massecuite | - |
| $\rho_m$ | Massecuite density | kg/m³ |
| $V_p$ | Pan capacity (strike volume) | m³ |
| $\dot{m}_m$ | Massecuite | kg/s |
| $\dot{V}_m$ | Massecuite volume | m³/s |
| $N$ | Strikes per day | - |

### Method and standards

Mass balance.

### Assumptions and limits

- Steady output. The sugar is taken as dry crystal; crystal dissolved by washing in the centrifugals is not counted, so slightly more massecuite is needed in practice.
- Strikes per day are volume per day over strike volume; pan cycle time (boiling, dropping, steaming out) decides how many pans are needed.

### References

- Crystal balance ṁ_m = ṁ_S/c_m; volume by density

## Report details

| | |
|---|---|
| Report reference | FCC-F601-EDS5 (the same inputs always give the same reference) |
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| Calculator | Massecuite Quantity and Pan Strikes for a Sugar Output |
| 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/pan-boiling/massecuite-quantity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.