Batch Centrifugal Capacity

Massecuite and sugar throughput of batch centrifugals from charge volume, massecuite density, cycles per hour, crystal content and number of machines.

Method: Throughput = charge × density × cycles × machines; sugar by crystal content

Input parameters

Unit system: SI

Parameter	Value	Unit
Charge per cycle	1.6000	m³
Massecuite density	1,500.0	kg/m³
Cycles per hour	22.000	
Crystal % massecuite	50.000	%
Machines in service	4.0000	

Calculated results

Parameter	Value	Unit
Massecuite cured	211.20	t/h
Crystal in the charge (sugar discharged is a little less)	105.60	t/h

Notes for this case

- Washing dissolves some crystal: sugar discharged is a little less than crystal in the charge.

Formula and method

$$\dot{m}_m = \frac{V_c \rho_m n_c N}{3600}, \quad \dot{m}_S = \dot{m}_m c_m$$

Variables

V_c	Charge per cycle	m³
ρ_m	Massecuite density	kg/m³
n_c	Cycles per hour	-
c_m	Crystal % massecuite	-
N	Machines in service	-
$\dot{m}_m$	Massecuite cured	kg/s
$\dot{m}_S$	Crystal in the charge (sugar discharged is a little less)	kg/s

Method and standards

Definitions.

Assumptions and limits

- Full charges.
- The sugar output is the crystal in the charge; wash water dissolves part of it, so the sugar actually discharged is a little less. No allowance is applied.

References

- Throughput = charge × density × cycles × machines; sugar by crystal content

Report details

Report reference	FCC-NB2B-ZQ6D (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/sugar-ethanol/centrifugals-sugar-house/batch-centrifugal-capacity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.