Pan Station Volume for A, B and C Massecuites

Pan volume needed for each massecuite from the crush, massecuite volume per tonne cane and the cycle time, and the station total per t cane/h (Hugot ch. 33).

Method: Hugot; Handbook of Cane Sugar Engineering; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Crushing rate	100.00	t/h
A massecuite per tonne cane	95.000	L/t
B massecuite per tonne cane	50.000	L/t
C massecuite per tonne cane	37.000	L/t
A cycle time	4.0000	h
B cycle time	5.0000	h
C cycle time	8.0000	h
Margin	1.1500	

Calculated results

Parameter	Value	Unit
A pans	43.700	m³
B pans	28.750	m³
C pans	34.040	m³
Total	106.49	m³
Pan volume per t cane/h (m³ per t/h)	1.0649	m³

Notes for this case

• Hugot: raw sugar factories install about 1.6–1.7 m³ of pans per t cane/h. That installed figure also covers footings, seed and grain strikes, which this working-volume estimate does not include, so a lower result is expected.

Formula and method

$$V_i = A\, v_i\, t_i\, k, \quad V = V_A + V_B + V_C$$

Variables

A	Crushing rate	kg/s
v_A	A massecuite per tonne cane	m³/kg
v_B	B massecuite per tonne cane	m³/kg
v_C	C massecuite per tonne cane	m³/kg
t_A	A cycle time	s
t_B	B cycle time	s
t_C	C cycle time	s
k	Margin	-
V_A	A pans	m³
V_B	B pans	m³
V_C	C pans	m³
V	Total	m³
V/A	Pan volume per t cane/h (m³ per t/h)	m³

Method and standards

Throughput times residence.

Assumptions and limits

- Steady crush; continuous use of pans.
- Footing, seed and graining strikes are not included; Hugot's installed 1.6–1.7 m³ per t cane/h covers them, so the result here is lower.
- V/A is the station volume in m³ for each tonne of cane per hour.

References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 33
• pan capacity and boiling times (Table 33.12 and pp. 669–675)

Report details

Report reference	FCC-5NC5-7Z9V (the same inputs always give the same reference)
Generated	17 November 2026, 19:49 UTC
Calculator	Pan Station Volume for A, B and C Massecuites
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/pan-station-volume

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.