Crystalliser Station Volume (Hugot)

Crystalliser volume for A, B and C massecuites from the crush, massecuite per tonne cane and the time in crystallisers, with Hugot's margin of 1.25 (ch. 34).

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	35.000	L/t
Time for A	12.000	h
Time for B	24.000	h
Time for C	72.000	h
Margin	1.2500	

Calculated results

Parameter	Value	Unit
A crystallisers	142.50	m³
B crystallisers	150.00	m³
C crystallisers	315.00	m³
Total	607.50	m³
Volume per t cane/h (m³ per t/h)	6.0750	m³

Notes for this case

- Hugot's example: 95, 50 and 35 L/t cane for 12, 24 and 72 h give about 14, 15 and 32 hL per t cane/h.

Formula and method

$$V_i = k\,A\,v_i\,t_i, \quad V = \sum V_i$$

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	Time for A	s
t_B	Time for B	s
t_C	Time for C	s
k	Margin	-
V_A	A crystallisers	m³
V_B	B crystallisers	m³
V_C	C crystallisers	m³
V	Total	m³
V/A	Volume per t cane/h	m³ per t/h

Method and standards

Hugot's throughput rule.

Assumptions and limits

- Steady crush.
- The volume per t cane/h is shown in m^3 per t/h in every unit system.

References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 34
• capacity of crystallisers
• pp. 727–729

Report details

Report reference	FCC-5AAB-SKKV (the same inputs always give the same reference)
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Calculator	Crystalliser Station Volume (Hugot)
Method last reviewed	13 November 2026
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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/pan-boiling/crystalliser-station-volume

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.