Non-Sucrose and Brix Balance of the Boiling House

Non-sucrose in mixed juice and leaving in sugar and molasses, the share that leaves (Douwes Dekker, Hugot ch. 39) and the C massecuite it implies.

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Mixed juice	35,700	t
Mixed juice brix	15.200	%
Mixed juice purity	84.000	%
Sugar made	3,900.0	t
Sugar brix (dry solids)	99.500	%
Sugar purity	99.000	%
Final molasses	1,100.0	t
Molasses brix	85.000	%
Molasses purity	38.000	%

Calculated results

Parameter	Value	Unit
Non-sucrose in mixed juice	868.22	t
Non-sucrose in sugar	38.805	t
Non-sucrose in molasses	579.70	t
Share of non-sucrose leaving	71.238	%
Share of brix accounted for	88.742	%
C massecuite implied (1 650 L/t non-sucrose)	1,432.6	m^3

Notes for this case

- Douwes Dekker: about 81 % of the mixed-juice non-sucrose should leave in sugar and molasses (gravity brix); here 71.2 %, at or below that figure. A higher share points to excess lime, inversion or recirculation; a molasses weight too high also inflates it.

Formula and method

$$NS = MB(1-P), \quad \frac{NS_S + NS_M}{NS_J}, \quad V_C \approx 1.65\ \mathrm{m^3/t}\ \times NS_J$$

Variables

M_J	Mixed juice	kg
B_J	Mixed juice brix	-
P_J	Mixed juice purity	-
M_S	Sugar made	kg
B_S	Sugar brix (dry solids)	-
P_S	Sugar purity	-
M_M	Final molasses	kg
B_M	Molasses brix	-
P_M	Molasses purity	-
NS_J	Non-sucrose in mixed juice	kg

NS_S	Non-sucrose in sugar	kg
NS_M	Non-sucrose in molasses	kg
$(NS_S + NS_M)/NS_J$	Share of non-sucrose leaving	-
$\Sigma B_{out}/B_J$	Share of brix accounted for	-
V_C	C massecuite implied (1 650 L/t non-sucrose)	m³

Method and standards

Non-sucrose and brix balances.

Assumptions and limits

- Over the same period; stock changes neglected.
- Mixed-juice purity must be below 100 %; the note compares the share leaving with Douwes Dekker's 81 %.

References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 39
• non-sucrose and brix balances and C massecuite per tonne non-sucrose
• pp. 841 and 847–848

Report details

Report reference	FCC-H6SK-VCXE (the same inputs always give the same reference)
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Calculator	Non-Sucrose and Brix Balance of the Boiling House
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/chemical-control/non-sucrose-balance

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.