Mixing Two Sugar Products to a Purity (Cobenze)

Share of two sugar-house products (syrup, molasses, magma) to blend for a target purity, on dry solids, by mass and by volume (Hugot 33.49–33.53, Cobenze).

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Purity of the richer product	85.000	%
Purity of the poorer product	60.000	%
Target purity	80.000	%
Brix of the richer product	65.000	%
Brix of the poorer product	70.000	%
Density of the richer product	1,320.0	kg/m³
Density of the poorer product	1,350.0	kg/m³

Calculated results

Parameter	Value	Unit
Dry solids from the richer product	80.000	%
Dry solids from the poorer product	20.000	%
Mass ratio richer / poorer	4.3077	
Volume ratio richer / poorer	4.4056	

Notes for this case

- Hugot's cross: syrup 85 and molasses 60 for 80 purity take 20 parts syrup and 5 parts molasses solids, 80 % and 20 %.

Formula and method

$$x_1 = \frac{P_t - P_2}{P_1 - P_2}, \quad x_2 = 1 - x_1, \quad \frac{m_1}{m_2} = \frac{x_1/B_1}{x_2/B_2}, \quad \frac{V_1}{V_2} = \frac{m_1}{m_2}\frac{d_2}{d_1}$$

Variables

P_1	Purity of the richer product	-
P_2	Purity of the poorer product	-
P_t	Target purity	-
B_1	Brix of the richer product	-
B_2	Brix of the poorer product	-
d_1	Density of the richer product	kg/m³
d_2	Density of the poorer product	kg/m³
x_1	Dry solids from the richer product	-
x_2	Dry solids from the poorer product	-
m_1/m_2	Mass ratio richer / poorer	-
V_1/V_2	Volume ratio richer / poorer	-

Method and standards

Linear mixing of sucrose and solids.

Assumptions and limits

- Purities on the same basis.

References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 33
• proportions of materials
• eqns 33.49–33.53
• pp. 692–694

Report details

Report reference	FCC-7CF9-BMT6 (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Mixing Two Sugar Products to a Purity (Cobenze)
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/centrifugals-sugar-house/purity-mixing-cobenze

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.