Clarification Efficiency and Non-Sugar Removal

Non-sugars in mixed and clear juice % cane, non-sugars removed and clarification efficiency from juice analyses and pol lost in filter cake.

Method: Sugar factory chemical control (daily manufacturing report) definitions; as compiled in SugarProcessTech; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Brix % mixed juice	15.500	%
Pol % mixed juice	13.000	%
Mixed juice % cane	105.00	%
Pol in filter cake % cane	0.080000	%
Clear juice purity	85.000	%

Calculated results

Parameter	Value	Unit
Non-sugars in mixed juice % cane	2.6250	%
Non-sugars in clear juice % cane	2.3947	%
Clarification efficiency	8.7731	%
Clarification factor 100 − efficiency	91.227	%

Formula and method

$$NS_{MJ,c} = (Bx_{MJ} - Pol_{MJ})\,MJ, \quad Pol_{CJ,c} = Pol_{MJ}\,MJ - Pol_{FC,c}$$

$$NS_{CJ,c} = \frac{Pol_{CJ,c}}{P_{CJ}} - Pol_{CJ,c}, \quad \eta_{cl} = \frac{NS_{MJ,c} - NS_{CJ,c}}{NS_{MJ,c}}$$

Variables

Bx_{MJ}	Brix % mixed juice	-
Pol_{MJ}	Pol % mixed juice	-
MJ	Mixed juice % cane	-
$Pol_{FC,c}$	Pol in filter cake % cane	-
P_{CJ}	Clear juice purity	-
$NS_{MJ,c}$	Non-sugars in mixed juice % cane	-
$NS_{CJ,c}$	Non-sugars in clear juice % cane	-
η_{cl}	Clarification efficiency	-
CF	Clarification factor 100 − efficiency	-

Method and standards

Non-sugar balance.

Assumptions and limits

- Daily averages.
- The result is very sensitive to the clear juice purity (one purity point changes the clear-juice non-sugars by about 7 %). Lime added and sucrose lost by inversion are not separated, so the efficiency mixes removal with additions.

References

- Sugar factory chemical control (daily manufacturing report) definitions
- as compiled in SugarProcessTech

- Formulas for calculating sugar industry DMR

Report details

Report reference	FCC-1RRD-VHXW (the same inputs always give the same reference)
Generated	17 November 2026, 19:34 UTC
Calculator	Clarification Efficiency and Non-Sugar Removal
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/clarification/clarification-efficiency

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.