SJM Formula: Expected Sugar Recovery

SJM recovery factor from sugar, juice and molasses purities, and expected sugar (pol) recovery % cane from pol in clear juice and unknown losses.

Method: SJM formula (pol balance of sugar, juice and molasses); Sugar factory chemical control (daily manufacturing report) definitions; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Purity of sugar	99.700	%
Purity of the juice whose pol is entered (clear juice)	85.000	%
Purity of final molasses	36.000	%
Pol in clear juice % cane	13.500	%
Unknown losses % cane	0.10000	%
Pol % sugar	99.700	%

Calculated results

Parameter	Value	Unit
SJM factor S(J − M)/[J(S − M)]	90.226	%
Expected pol in sugar % cane	12.081	%
Expected sugar % cane	12.117	%

Notes for this case

- The SJM factor is the share of pol in juice that can be crystallised at these purities.

Formula and method

$$SJM = \frac{S(J-M)}{J(S-M)}, \quad R_{pol} = Pol_{CJ,c}\, SJM - L_u, \quad R = \frac{R_{pol}}{Pol_S}$$

Variables

S	Purity of sugar	-
J	Purity of the juice whose pol is entered (clear juice)	-
M	Purity of final molasses	-
$Pol_{CJ,c}$	Pol in clear juice % cane	-
L_u	Unknown losses % cane	-
Pol_S	Pol % sugar	-
SJM	SJM factor S(J − M)/[J(S − M)]	-
R_{pol}	Expected pol in sugar % cane	-
R	Expected sugar % cane	-

Method and standards

Purity balance.

Assumptions and limits

- Apparent purities.
- Juice purity and pol % cane must refer to the same juice (clear juice). A negative expected recovery (unknown losses above the recoverable pol) is flagged.

References

- SJM formula (pol balance of sugar, juice and molasses)
- Sugar factory chemical control (daily manufacturing report) definitions
- as compiled in SugarProcessTech
- Formulas for calculating sugar industry DMR

Report details

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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/sjm-expected-recovery

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.