Cane Payment on Recoverable Sugar (SJM)

Recoverable sugar per tonne cane for payment from pol % cane and first expressed juice purity, with the Philippine molasses purity rule (Hugot 39.2), and cane value.

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Pol % cane	13.000	%
Purity of first expressed juice	88.000	%
Constant in the molasses purity rule, in purity points (e.g. 33, not 0.33) Hugot: 28.57 or a local value, e.g. 33. Entered as purity points, while the purities above are in %.	33.000	
Sugar purity	99.500	%
Factory losses other than molasses (share of pol) Bagasse, filter cake and undetermined; extraction losses belong here.	8.0000	%
Sugar price per tonne	35,000	
Grower's share	65.000	%

Calculated results

Parameter	Value	Unit
Molasses purity for this cane (0.4(100 − J) + K)	37.800	%
SJM recovery	91.994	%
Recoverable sugar per tonne cane	110.58	kg/t
Value of the sugar per tonne cane	3,870.2	
Payment to the grower per tonne cane	2,515.6	

Notes for this case

- Hugot's examples of the rule with K = 33: J = 88 gives m′ = 37.8; J = 82 gives 40.2. Prices in any currency per tonne of sugar.

Formula and method

$$m' = 0.4(100 - J) + K, \quad \rho = \frac{s(J - m')}{J(s - m')}, \quad X = \frac{Pol_c(1 - \phi)\rho}{s}, \quad V_g = \sigma X p$$

Variables

Pol_c	Pol % cane	-
J	Purity of first expressed juice	-
K	Constant in the molasses purity rule, in purity points (e.g. 33)	-
s	Sugar purity	-
ϕ	Factory losses other than molasses (share of pol)	-
p	Sugar price per tonne	-
σ	Grower's share	-
m'	Molasses purity for this cane (0.4(100 − J) + K)	-
ρ	SJM recovery	-
X	Recoverable sugar per tonne cane	kg/kg
V	Value of the sugar per tonne cane	-

V_g	Payment to the grower per tonne cane	-

Method and standards

SJM recovery with Hugot's cited rule for m′.

Assumptions and limits

- Purities in the same basis; J enters the m′ rule in purity points (J = 88 for 88 %), with K in the same points.
- The rule is an empirical local fit; Hugot quotes it for normal juice purities (his examples J = 82–88). At J = 100 it gives m′ = K.

References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 39
• eqns 39.1–39.2 (Philippine comment)
• pp. 838–839

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/cane-payment-recoverable-sugar

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.