# Extraction of Each Mill from Bagasse Analyses

Unit and cumulative extraction of each mill of a tandem from pol and fibre in cane and in each bagasse (Hugot eqns 21.4–21.5), for up to six mills.

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

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Pol % cane | 13.500 | % |
| Fibre % cane | 14.600 | % |
| Pol % bagasse from mill 1 (0 if none) | 10.500 | % |
| Fibre % bagasse from mill 1 | 33.000 | % |
| Pol % bagasse from mill 2 (0 if none) | 6.0000 | % |
| Fibre % bagasse from mill 2 | 40.000 | % |
| Pol % bagasse from mill 3 (0 if none) | 3.8000 | % |
| Fibre % bagasse from mill 3 | 44.000 | % |
| Pol % bagasse from mill 4 (0 if none) | 2.8000 | % |
| Fibre % bagasse from mill 4 | 47.000 | % |
| Pol % bagasse from mill 5 (0 if none) | 2.1000 | % |
| Fibre % bagasse from mill 5 | 49.000 | % |
| Pol % bagasse from mill 6 (0 if none) | 1.6000 | % |
| Fibre % bagasse from mill 6 | 50.000 | % |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Unit extraction of mill 1 | 65.589 | % |
| Unit extraction of mill 2 | 52.857 | % |
| Unit extraction of mill 3 | 42.424 | % |
| Unit extraction of mill 4 | 31.019 | % |
| Unit extraction of mill 5 | 28.061 | % |
| Unit extraction of mill 6 | 25.333 | % |
| Cumulative extraction to mill 1 | 65.589 | % |
| Cumulative extraction to mill 2 | 83.778 | % |
| Cumulative extraction to mill 3 | 90.660 | % |
| Cumulative extraction to mill 4 | 93.557 | % |
| Cumulative extraction to mill 5 | 95.365 | % |
| Cumulative extraction to mill 6 | 96.539 | % |

**Notes for this case**

- Unit extraction is pol removed by that mill as a share of the pol it received; mills not entered are not shown.

## Formula and method

$$e_1 = 1 - \frac{S_1 f}{S_0 f_1}, \quad e_n = 1 - \frac{S_n}{S_{n-1}} \cdot \frac{f_{n-1}}{f_n}, \quad E_n = 1 - \prod_{i \le n} (1 - e_i)$$

## Variables

| | | |
|---|---|---|
| $S_0$ | Pol % cane | - |
| $f$ | Fibre % cane | - |
| $S_1$ | Pol % bagasse from mill 1 (0 if none) | - |
| $f_1$ | Fibre % bagasse from mill 1 | - |
| $S_2$ | Pol % bagasse from mill 2 (0 if none) | - |
| $f_2$ | Fibre % bagasse from mill 2 | - |
| $S_3$ | Pol % bagasse from mill 3 (0 if none) | - |
| $f_3$ | Fibre % bagasse from mill 3 | - |
| $S_4$ | Pol % bagasse from mill 4 (0 if none) | - |
| $f_4$ | Fibre % bagasse from mill 4 | - |
| $S_5$ | Pol % bagasse from mill 5 (0 if none) | - |
| $f_5$ | Fibre % bagasse from mill 5 | - |
| $S_6$ | Pol % bagasse from mill 6 (0 if none) | - |
| $f_6$ | Fibre % bagasse from mill 6 | - |
| $e_1$ | Unit extraction of mill 1 | - |
| $e_2$ | Unit extraction of mill 2 | - |
| $e_3$ | Unit extraction of mill 3 | - |
| $e_4$ | Unit extraction of mill 4 | - |
| $e_5$ | Unit extraction of mill 5 | - |
| $e_6$ | Unit extraction of mill 6 | - |
| $E_1$ | Cumulative extraction to mill 1 | - |
| $E_2$ | Cumulative extraction to mill 2 | - |
| $E_3$ | Cumulative extraction to mill 3 | - |
| $E_4$ | Cumulative extraction to mill 4 | - |
| $E_5$ | Cumulative extraction to mill 5 | - |
| $E_6$ | Cumulative extraction to mill 6 | - |

## Method and standards

Hugot's pol balance with constant fibre.

## Assumptions and limits

- Constant fibre through the mills.
- Mills not entered are not shown. A negative unit extraction (pol per fibre rising) is flagged as a likely sampling error.

## References

• Hugot
• Handbook of Cane Sugar Engineering
• 3rd ed. (Elsevier, 1986)
• ch. 21
• eqns 21.4–21.5 and Table 21.1
• pp. 330–331

## Report details

| | |
|---|---|
| Report reference | FCC-1T4Q-ZB6S (the same inputs always give the same reference) |
| Generated | 17 November 2026, 19:48 UTC |
| Calculator | Extraction of Each Mill from Bagasse Analyses |
| 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/milling/mill-extraction-per-mill

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.