# Diffuser Megasse Dewatering Balance

Wet bagasse leaving a diffuser and after the dewatering roller and mills, the water pressed out and the dewatering power, from moistures and fibre (Hugot ch. 23).

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

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Crushing rate | 250.00 | t/h |
| Fibre % cane | 14.500 | % |
| Dissolved solids in bagasse per unit fibre | 4.0000 | % |
| Moisture of megasse leaving the diffuser<br>Hugot: 83–86 %. | 85.000 | % |
| Moisture after the dewatering roller or press | 76.000 | % |
| Final bagasse moisture (wet basis) | 50.000 | % |
| Dewatering power per tonne cane per hour<br>Hugot: cone press 3, French press 4.5 kW per t cane/h; BMA dewatering mills more. | 4.5000 | kWh/t |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Megasse leaving the diffuser | 251.33 | t/h |
| Bagasse after the dewatering roller | 157.08 | t/h |
| Final bagasse | 75.400 | t/h |
| Press water returned | 175.93 | t/h |
| Dewatering power | 1,125.0 | kW |

**Notes for this case**

- Press water carries sugar and fine bagasse; it goes back to the diffuser, usually after heating and screening.

## Formula and method

$$M_i = \frac{A f (1 + r)}{1 - w_i}, \quad W_p = M_0 - M_2, \quad P = eA$$

### Variables

| | | |
|---|---|---|
| $A$ | Crushing rate | kg/s |
| $f$ | Fibre % cane | - |
| $r$ | Dissolved solids in bagasse per unit fibre | - |
| $w_0$ | Moisture of megasse leaving the diffuser | - |
| $w_1$ | Moisture after the dewatering roller or press | - |
| $w_2$ | Final bagasse moisture (wet basis) | - |
| $e$ | Dewatering power per tonne cane per hour | J/kg |
| $M_0$ | Megasse leaving the diffuser | kg/s |
| $M_1$ | Bagasse after the dewatering roller | kg/s |
| $M_2$ | Final bagasse | kg/s |
| $W_p$ | Press water returned | kg/s |
| $P$ | Dewatering power | W |

### Method and standards

Dry-solids balance.

### Assumptions and limits

- Constant solids through the presses: one dissolved-solids ratio r for all stages. The press water removes some sugar, so the final bagasse flow is slightly overstated.
- Moistures are on the wet basis (water per kg of wet bagasse); convert a dry-basis figure before using it in other calculators.

### References

- Hugot
- Handbook of Cane Sugar Engineering
- 3rd ed. (Elsevier, 1986)
- ch. 23
- megasse and dewatering (BMA and Silver data)
- pp. 383–392

## Report details

| | |
|---|---|
| Report reference | FCC-ZCKR-2W1K (the same inputs always give the same reference) |
| Generated | 17 November 2026, 19:33 UTC |
| Calculator | Diffuser Megasse Dewatering Balance |
| 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/diffusion/diffuser-dewatering

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.