Pulp Yield and Wood Consumption per Air-Dry Tonne

Pulp yield on wood, screened yield after rejects, and wood consumption per air-dry tonne of pulp (90 % bone dry) in OD tonnes and solid cubic metres.

Method: Smook; Handbook for Pulp & Paper Technologists; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Total pulp yield on OD wood	47.000	%
Rejects (share of total pulp)	2.0000	%
Basic density of the wood (OD mass per green volume)	450.00	kg/m³

Calculated results

Parameter	Value	Unit
Screened yield	46.060	%
OD wood per air-dry tonne of pulp	1.9540	kg/kg
Solid wood per air-dry tonne	4.3422	m³/t

Notes for this case

- Wood for screened chips only: bark, fines and chip-screening losses come on top.

Formula and method

$$Y_s = Y(1-r), \quad W_{OD} = \frac{0.9}{Y_s}, \quad V_w = \frac{W_{OD}}{\rho_b}$$

Variables

Y	Total pulp yield on OD wood	-
r	Rejects (share of total pulp)	-
ρ_b	Basic density of the wood (OD mass per green volume)	kg/m³
Y_s	Screened yield	-
W_{OD}	OD wood per air-dry tonne of pulp	kg/kg
V_w	Solid wood per air-dry tonne	m³/kg

Method and standards

Yield definitions.

Assumptions and limits

- Rejects not re-cooked.
- Wood consumption is for screened chips to the digester; bark, fines and chip-screening losses are not included.

References

- Smook
- Handbook for Pulp & Paper Technologists
- 3rd ed. (Angus Wilde, 2002)
- ch. 4 and 8: yield on wood; air-dry ton = 90 % bone-dry fibre and 10 % water (ch. 8)

Report details

Report reference	FCC-8J97-AH5V (the same inputs always give the same reference)
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Calculator	Pulp Yield and Wood Consumption per Air-Dry Tonne
Method last reviewed	13 November 2026
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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/chemical/pulp-paper/pulp-yield-wood-consumption

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.