Wood Chip Pile Volume and Days of Storage

Chip pile volume, ground area and days of supply from wood use, chip bulk density (OD kg per loose m³), pile height and the pile's fill factor.

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Wood use (oven-dry)	1,000.0	t/d
Chip bulk density (OD per loose m³)	160.00	kg/m³
Days of storage	20.000	d
Pile height	25.000	m
Fill factor of the pile envelope	60.000	%

Calculated results

Parameter	Value	Unit
Chips stored (OD)	20,000	t
Pile volume (loose)	125,000	m³
Ground area	8,333.3	m²

Notes for this case

- Old chips lose yield and extractives; rotate the pile first-in, first-out.

Formula and method

$$M = \dot{m}_w t, \quad V = \frac{M}{\rho_b}, \quad A = \frac{V}{H\phi}$$

Variables

$\dot{m}_w$	Wood use (oven-dry)	kg/s
ρ_b	Chip bulk density (OD per loose m³)	kg/m³
t	Days of storage	s
H	Pile height	m
ϕ	Fill factor of the pile envelope	-
M	Chips stored (OD)	kg
V	Pile volume (loose)	m³
A	Ground area	m²

Method and standards

Inventory and geometry.

Assumptions and limits

- Uniform pile; no compaction.

References

- Smook
- Handbook for Pulp & Paper Technologists
- 3rd ed. (Angus Wilde, 2002)
- ch. 3 (wood and chip handling and storage)

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/chemical/pulp-paper/chip-pile-storage

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.