Dryer Section Steam per Tonne of Paper

Dryer section steam use per tonne of paper and per hour from press and reel dryness, paper production and the steam used per kg of water evaporated.

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

Input parameters

Unit system: SI

Parameter	Value	Unit
Dryness entering the dryers	45.000	%
Dryness at the reel	92.000	%
Paper production	1,000.0	t/d
Steam per kg of water evaporated Typical 1.3–1.6 kg/kg.	1.3000	kg/kg

Calculated results

Parameter	Value	Unit
Water evaporated per tonne	1.0444	kg/kg
Steam per tonne of paper	1.3578	kg/kg
Steam to the dryers	56.574	t/h

Formula and method

$$E = \frac{d_{reel}}{d_{press}} - 1, \quad S = sE$$

Variables

d_{press}	Dryness entering the dryers	-
d_{reel}	Dryness at the reel	-
P	Paper production	kg/s
s	Steam per kg of water evaporated	kg/kg
E	Water evaporated per tonne	kg/kg
S	Steam per tonne of paper	kg/kg
$\dot{S}$	Steam to the dryers	kg/s

Method and standards

Water balance with a specific steam consumption.

Assumptions and limits

- s includes all dryer losses.

References

• Smook
• Handbook for Pulp & Paper Technologists
• 3rd ed. (Angus Wilde, 2002)
• ch. 17 (drying: steam-heated cylinders; steam per unit water evaporated)

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/dryer-section-steam

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.