Spinning Mill Yarn Realisation from Cotton

Yarn realisation from cotton fed to a spinning line from the waste removed at blowroom, carding, combing and later processes, with the cotton needed per kg of yarn.

Method: Definitions and mass and energy balances: each waste share on the input to its process

Input parameters

Unit system: SI

Parameter	Value	Unit
Cotton (lint) fed	10,000	kg
Blowroom waste Each waste share is on the material entering that process, not on the cotton fed to the mill.	4.0000	%
Card waste	5.0000	%
Comber noil (0 for carded yarn)	16.000	%
Waste in later processes (draw frame to winding)	2.0000	%

Calculated results

Parameter	Value	Unit
Yarn produced	7,507.6	kg
Yarn realisation	75.076	%
Cotton per kg of yarn	1.3320	kg/kg

Notes for this case

- Each waste share applies to the material entering that process, so the losses multiply.

Formula and method

$$R = (1 - w_b)(1 - w_c)(1 - w_{cb})(1 - w_o), \quad Y = MR$$

Variables

M	Cotton (lint) fed	kg
w_b	Blowroom waste	-
w_c	Card waste	-
w_{cb}	Comber noil (0 for carded yarn)	-
w_o	Waste in later processes (draw frame to winding)	-
Y	Yarn produced	kg
R	Yarn realisation	-
M/Y	Cotton per kg of yarn	kg/kg

Method and standards

Sequential mass balance.

Assumptions and limits

- Same moisture basis throughout.
- Each waste share is on the input to its own process. Mill figures quoted on cotton fed must be converted first (or simply subtracted from 100 % for the realisation).

References

- Definitions and mass and energy balances: each waste share on the input to its process

Report details

Report reference	FCC-BZ6A-H90Y (the same inputs always give the same reference)
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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/textile-rice-oil/spinning-yarn-realisation

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.