Yarn Required for a Woven Fabric Order

Warp and weft yarn needed for a length of woven fabric from total ends, picks per cm, reed width, yarn tex, crimp and process waste.

Method: Definitions: yarn length × linear density; with warp crimp and waste

Input parameters

Unit system: SI

Parameter	Value	Unit
Fabric length ordered	10,000	m
Total warp ends	6,000.0	
Picks per cm	30.000	
Reed width (weft length per pick)	1.6000	m
Warp tex	20.000	
Weft tex	25.000	
Warp crimp	8.0000	%
Process waste allowance	3.0000	%

Calculated results

Parameter	Value	Unit
Warp yarn	1,334.9	kg
Weft yarn	1,236.0	kg
Total yarn	2,570.9	kg
Yarn per metre of fabric	0.25709	kg/m

Notes for this case

- Weft crimp is already in the reed width (wider than the cloth); add selvedge ends to the total ends.

Formula and method

$$M_w = L_f(1+c_w)n_e T_w(1+w), \quad M_f = L_f n_p W_r T_f(1+w) \quad (T \text{ in g/km})$$

Variables

L_f	Fabric length ordered	m
n_e	Total warp ends	-
n_p	Picks per cm	-
W_r	Reed width (weft length per pick)	m
T_w	Warp tex	-
T_f	Weft tex	-
c_w	Warp crimp	-
w	Process waste allowance	-
M_w	Warp yarn	kg
M_f	Weft yarn	kg
M	Total yarn	kg
M/L_f	Yarn per metre of fabric	kg/m

Method and standards

Yarn length balance.

Assumptions and limits

- Plain or simple weaves.
- The waste allowance w is added on the net requirement, (1 + w). If w is a share of the yarn issued, the factor is 1/(1 − w), slightly larger.

References

- Definitions: yarn length × linear density
- with warp crimp and waste

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/textile-rice-oil/woven-fabric-yarn-requirement

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.