Woven Fabric GSM from Ends, Picks and Yarn Counts

Fabric mass per square metre from ends and picks per cm, warp and weft yarn tex and crimp percentages, and the fabric mass per running metre for a width.

Method: Definitions and mass and energy balances: yarn length per m² × linear density; with crimp

Input parameters

Unit system: SI

Parameter	Value	Unit
Ends per cm	40.000	
Picks per cm	30.000	
Warp yarn tex	20.000	
Weft yarn tex	25.000	
Warp crimp	8.0000	%
Weft crimp	6.0000	%
Fabric width	1.5000	m

Calculated results

Parameter	Value	Unit
Warp contribution	86.400	g/m²
Weft contribution	79.500	g/m²
Fabric mass per m²	165.90	g/m²
Mass per running metre	0.24885	kg/m

Notes for this case

- Add size, finishes and moisture regain to compare with a weighed GSM.

Formula and method

$$G_w = 100\, n_e\, T_w (1 + c_w), \quad G_f = 100\, n_p\, T_f (1 + c_f), \quad G = G_w + G_f, \quad m_l = G\, W$$

Variables

n_e	Ends per cm	-
n_p	Picks per cm	-
T_w	Warp yarn tex	-
T_f	Weft yarn tex	-
c_w	Warp crimp	-
c_f	Weft crimp	-
W	Fabric width	m
G_w	Warp contribution	kg/m²
G_f	Weft contribution	kg/m²
G	Fabric mass per m²	kg/m²
m_l	Mass per running metre	kg/m

Method and standards

Yarn mass per unit area.

Assumptions and limits

- Plain construction; no size or finish.
- Ends and picks are per cm; the factor 100 turns them into threads per metre.

References

- Definitions and mass and energy balances: yarn length per m^2 × linear density
- with crimp

Report details

Report reference	FCC-WB5S-50ED (the same inputs always give the same reference)
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Calculator	Woven Fabric GSM from Ends, Picks and Yarn Counts
Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
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/fabric-gsm-from-construction

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.