Knitted Fabric GSM from Stitch Density and Loop Length

Grams per square metre of a weft-knitted fabric from courses and wales per cm, loop (stitch) length and yarn tex, with the tightness factor.

Method: Definitions and mass and energy balances: loops per m² × yarn mass per loop

Input parameters

Unit system: SI

Parameter	Value	Unit
Courses per cm	18.000	
Wales per cm	14.000	
Loop length	2.8000	mm
Yarn tex	20.000	

Calculated results

Parameter	Value	Unit
Stitch density per cm²	252.00	
Fabric mass per m²	141.12	g/m²
Tightness factor √tex / ℓ(mm)	1.5972	

Formula and method

$$G = cw \times 10^4 \cdot \ell \cdot T \times 10^{-6} \quad (\ell \text{ in m},\ T \text{ in tex},\ G \text{ in kg/m}^2), \quad TF = \frac{\sqrt{T}}{\ell\,[\text{mm}]}$$

Variables

c	Courses per cm	-
w	Wales per cm	-
ℓ	Loop length	m
T	Yarn tex	-
S	Stitch density per cm²	-
G	Fabric mass per m²	kg/m²
TF	Tightness factor √tex / ℓ(mm)	-

Method and standards

Yarn mass per unit area.

Assumptions and limits

- Single-jersey structure.

References

- Definitions and mass and energy balances: loops per m² × yarn mass per loop

Report details

Report reference	FCC-M5PN-FGTP (the same inputs always give the same reference)
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Calculator	Knitted Fabric GSM from Stitch Density and Loop Length
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/knitted-fabric-gsm

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.