# Finned Tube Weight per Metre (Solid or Serrated Fins)

Mass per metre of solid or serrated helical fins and of the bare tube from tube size, fin height, thickness, density and material factor (Ganapathy Eqs. 64–65).

**Method:** Ganapathy; Steam Plant Calculations Manual; ...

## Input parameters

Unit system: SI

| Parameter | Value | Unit |
|---|---|---|
| Tube outer diameter | 50.800 | mm |
| Average tube wall thickness | 3.0480 | mm |
| Fin height | 19.050 | mm |
| Fin thickness | 1.2700 | mm |
| Fin density (fins per metre) | 196.85 | |
| Tube material factor (0 = same as the fins) | Same as the fins | |
| Fin type | Solid | |
| Fin material factor | Carbon steel and alloys (1.0) | |

## Calculated results

| Parameter | Value | Unit |
|---|---|---|
| Fin mass per metre | 8.5229 | kg/m |
| Tube mass per metre | 3.5856 | kg/m |
| Finned tube mass per metre | 12.109 | kg/m |

## Formula and method

$$W_f = 10.68\,F b n\,(d_o + h)(h + 0.03)\ \text{(solid)},\quad W_f = 10.68\,F b n\,d_o(h + 0.12)\ \text{(serrated)},\quad W_t = 10.68\,F_t\,d_m t_w\ \ (\text{lb/ft};\ in)$$

### Variables

| | | |
|---|---|---|
| $d_o$ | Tube outer diameter | m |
| $t_w$ | Average tube wall thickness | m |
| $h$ | Fin height | m |
| $b$ | Fin thickness | m |
| $n$ | Fin density (fins per metre) | - |
| $\mathrm{type}$ | Fin type | - |
| $F$ | Fin material factor | - |
| $F_t$ | Tube material factor (0 = same as the fins) | - |
| $W_f$ | Fin mass per metre | kg/m |
| $W_t$ | Tube mass per metre | kg/m |
| $W$ | Finned tube mass per metre | kg/m |

### Method and standards

Ganapathy's Eqs. (64)–(65) converted to SI.

### Assumptions and limits

- Helical fins; steel density basis.
- Fins and tube may be of different materials (for example carbon-steel tube with stainless fins); with F_t = 0 the tube uses the fin factor.

### References

- Ganapathy
- Steam Plant Calculations Manual
- 2nd ed. (Marcel Dekker, 1993)
- Q4.25
- Eqs. (64a)
- (64b)
- (65) and Table 4.20 (material factors)

## Report details

| | |
|---|---|
| Report reference | FCC-R8R5-Z7RS (the same inputs always give the same reference) |
| Generated | 17 November 2026, 19:36 UTC |
| Calculator | Finned Tube Weight per Metre (Solid or Serrated Fins) |
| 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/mechanical/heat-transfer/finned-tube-weight

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.