Tube Deposit Weight Density and Thickness

Deposit weight density from a scraped tube sample, the equivalent deposit thickness and the total deposit on the waterside area, for chemical cleaning decisions.

Method: Definitions: weight density = mass/area; thickness = weight density/density

Input parameters

Unit system: SI

Parameter	Value	Unit
Deposit removed from the sample	3.5000	mg
Sample waterside area	12.000	cm²
Deposit density (magnetite about 5000)	5,000.0	kg/m³
Total waterside area of the circuit	800.00	m²

Calculated results

Parameter	Value	Unit
Deposit weight density	2.9167	g/m²
Equivalent thickness	0.58333	µm
Total deposit in the circuit	2.3333	kg

Notes for this case

- Weight density thresholds for cleaning depend on pressure and heat flux; follow your boiler maker's or utility guideline.

Formula and method

$$g_d = \frac{m_s}{A_s}, \quad \delta = \frac{g_d}{\rho_d}, \quad M_d = g_d A_t$$

Variables

m_s	Deposit removed from the sample	kg
A_s	Sample waterside area	m²
ρ_d	Deposit density (magnetite about 5000)	kg/m³
A_t	Total waterside area of the circuit	m²
g_d	Deposit weight density	kg/m²
δ	Equivalent thickness	m
M_d	Total deposit in the circuit	kg

Method and standards

Definitions.

Assumptions and limits

- Uniform deposit.
- The total applies the sample's weight density to the whole waterside area. Taken from the heaviest (hot) side, it overstates the circuit total; use it as an upper bound.

References

- Definitions: weight density = mass/area; thickness = weight density/density

Report details

Report reference	FCC-NXV2-9K6H (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Tube Deposit Weight Density and Thickness
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/boilers-power-plant/water-treatment/deposit-weight-density

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.