Density and Specific Volume Converter (kg/m³, g/cm³, lb/ft³)

Convert a density between kg/m³, g/cm³, kg/L and lb/ft³, and give the specific volume in m³/kg, L/kg and ft³/lb.

Method: NIST SP 811 (2008); Appendix B conversion factors

Input parameters

Unit system: SI

Parameter	Value	Unit
Density (choose its unit)	5.1500	kg/m³

Calculated results

Parameter	Value	Unit
Density in kg/m³	5.1500	kg/m³
Density in g/cm³	0.005150	g/cm³
Density in kg/L	0.005150	kg/L
Density in lb/ft³	0.32150	lb/ft³
Specific volume in m³/kg	0.19417	m³/kg
Specific volume in L/kg	194.17	L/kg
Specific volume in ft³/lb	3.1104	ft³/lb

Notes for this case

- Specific volume is the inverse of density.

Formula and method

$$v = \frac{1}{\rho}, \quad 1\ \mathrm{lb/ft^3} = 16.018\,46\ \mathrm{kg/m^3}$$

Variables

ρ	Density (choose its unit)	kg/m³
v	Specific volume in m³/kg	m³/kg

Method and standards

Exact pound and foot definitions (NIST SP 811).

Assumptions and limits

- Units only.

References

- NIST SP 811 (2008)
- Appendix B conversion factors

Report details

Report reference	FCC-J3XK-5DY0 (the same inputs always give the same reference)
Generated	17 November 2026, 19:54 UTC
Calculator	Density and Specific Volume Converter (kg/m³, g/cm³, lb/ft³)
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	3 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/general/unit-conversions/density-unit-converter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.