Twaddell and Baumé Degrees to Specific Gravity

Convert between specific gravity, degrees Twaddell and degrees Baumé (heavy and light liquids), as used for caustic soda, acids, brines and dye liquors.

Method: Twaddell scale and American Baumé scales (modulus 145, light liquids 140/130)

Input parameters

Unit system: SI

Parameter	Value	Unit
Value entered is	Specific gravity	
Value	1.5000	

Calculated results

Parameter	Value	Unit
Specific gravity (water = 1)	1.5000	
Degrees Twaddell (heavy liquids)	100.00	
Degrees Baumé, heavy liquids	48.333	
Degrees Baumé, light liquids (if SG below 1)	-36.667	
Density at about 15 °C	1,498.7	kg/m³

Notes for this case

• Twaddell degrees are a linear scale: SG = 1 + °Tw/200, so 100 °Tw is SG 1.5. Baumé degrees follow the US (American) scale: for liquids heavier than water SG = 145/(145 − °Bé), for lighter liquids SG = 140/(130 + °Bé). The Twaddell and heavy Baumé scales read zero for water. Density uses water at about 15 °C (999.1 kg/m³); the scales were defined near 15–20 °C.

Formula and method

$$SG = 1 + \frac{^\circ Tw}{200}, \quad SG = \frac{145}{145 - ^\circ Be}\ \text{(heavy)}, \quad SG = \frac{140}{130 + ^\circ Be}\ \text{(light)}$$

Variables

from	Value entered is	-
x	Value	-
SG	Specific gravity (water = 1)	-
$^\circ Tw$	Degrees Twaddell (heavy liquids)	-
$^\circ Be_h$	Degrees Baumé, heavy liquids	-
$^\circ Be_l$	Degrees Baumé, light liquids (if SG below 1)	-
ρ	Density at about 15 °C	kg/m³

Method and standards

Twaddell and Baumé.

Assumptions and limits

- American Baumé scale; temperature near 15 °C.

References

Twaddell scale and American Baumé scales (modulus 145, light liquids 140/130)

Report details

Report reference	FCC-CY5G-E5SW (the same inputs always give the same reference)
Generated	23 November 2026, 17:50 UTC
Calculator	Twaddell and Baumé Degrees to Specific Gravity
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	4 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/twaddell-baume-specific-gravity

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.