Solution Gas-Oil Ratio: Standing, Glasø, Marhoun, Petrosky–Farshad

Gas solubility in crude oil at a pressure and temperature by four black-oil correlations, from oil API gravity and gas gravity, for comparison.

Input parameters

Unit system: SI

Parameter	Value	Unit
Pressure (at or below the bubble point)	2,515.0	psi
Temperature	200.00	°F
Oil gravity	35.000	
Gas gravity (air = 1)	0.80000	

Calculated results

Parameter	Value	Unit
Standing	623.77	scf/STB
Glasø	537.66	scf/STB
Marhoun	568.39	scf/STB
Petrosky–Farshad	534.37	scf/STB
Stock-tank oil specific gravity	0.84985	

Notes for this case

• Valid at or below the bubble point; above it R_s stays at its bubble-point value. The comparison on six crudes: Standing 10 %, Glasø 5.8 %, Marhoun 12.4 %, Petrosky–Farshad 7.8 % average error. Vasquez–Beggs is on its own page.

Formula and method

$$R_s = \gamma_g \left[\left(\frac{p}{18.2}+1.4\right) 10^{0.0125API-0.00091T}\right]^{1.2048}, \quad R_s = \gamma_g \left[\frac{API^{0.989}}{T^{0.172}} p_b^*\right]^{1.2255}, \quad R_s = \left[\left(\frac{p}{112.727}+12.34\right) \gamma_g^{0.8439} 10^{x}\right]^{1.73184}$$

Variables

p	Pressure (at or below the bubble point)	Pa
T	Temperature	K
API	Oil gravity	-
γ_g	Gas gravity (air = 1)	-
$R_{s,Standing}$	Standing	m³/m³
$R_{s,Glaso}$	Glasø	m³/m³
$R_{s,Marhoun}$	Marhoun	m³/m³
$R_{s,PF}$	Petrosky–Farshad	m³/m³
γ_o	Stock-tank oil specific gravity	-

Method and standards

Black-oil gas solubility correlations (psia, °F, °R).

Assumptions and limits

- Black oils; hydrocarbon gas.

Report details

Report reference	FCC-RD7T-56AA (the same inputs always give the same reference)
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Method last reviewed	17 November 2026
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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/chemical/oil-gas/solution-gas-oil-ratio-correlations

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.