Gas Reservoir Material Balance (p/z)

Original gas in place of a volumetric gas reservoir from initial and current p/z and the gas produced, and the recovery factor reached.

Input parameters

Unit system: SI

Parameter	Value	Unit
Initial reservoir pressure	3,000.0	psi
Z at initial pressure	0.85000	
Current reservoir pressure	2,500.0	psi
Z at current pressure	0.84000	
Cumulative gas produced (standard)	2.8317e+08	m³

Calculated results

Parameter	Value	Unit
Initial p/z	3,529.4	psi
Current p/z	2,976.2	psi
Original gas in place (standard)	1.8065e+09	m³
Recovery to date	15.675	%

Notes for this case

• Volumetric (no water influx) reservoir: p/z falls on a straight line against G_p and reaches zero at G. Water drive keeps p/z higher and makes this G too large; plot several points to check the line.

Formula and method

$$\frac{p}{z} = \frac{p_i}{z_i}\left(1 - \frac{G_p}{G}\right) \Rightarrow G = G_p \frac{p_i/z_i}{p_i/z_i - p/z}$$

Variables

p_i	Initial reservoir pressure	Pa
z_i	Z at initial pressure	-
p	Current reservoir pressure	Pa
z	Z at current pressure	-
G_p	Cumulative gas produced (standard)	m³
p_i/z_i	Initial p/z	Pa
p/z	Current p/z	Pa
G	Original gas in place (standard)	m³
G_p/G	Recovery to date	-

Method and standards

Volumetric gas material balance.

Assumptions and limits

- Volumetric reservoir; no influx.

Report details

Report reference	FCC-YKRG-R2QA (the same inputs always give the same reference)
Generated	23 November 2026, 17:26 UTC
Calculator	Gas Reservoir Material Balance (p/z)
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 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/chemical/reservoir-engineering/gas-material-balance-pz

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.