Natural Gas Water Content (Bukacek Correlation)

Saturated water content of sweet natural gas at a pressure and temperature by the Bukacek correlation, in lb/MMscf and mg/Sm³, with the water to remove to a target.

Method: Bukacek water content correlation

Input parameters

Unit system: SI

Parameter	Value	Unit
Gas pressure (absolute)	70.000	bar
Gas temperature	30.000	°C
Gas flow (standard)	360,000	Nm³/h
Target water content (lb/MMscf)	7.0000	

Calculated results

Parameter	Value	Unit
Saturated water content (lb/MMscf)	39.828	
Saturated water content per standard m³ (15 °C)	637.99	mg/m³
Water to remove	200.09	kg/h

Notes for this case

• Bukacek: W = 47,484·p_v/P + B, $\log_{10}$B = −3,083.87/(459.6 + T) + 6.69449 (W in lb/MMscf, P and p_v in psia, T in °F); 1 lb/MMscf ≈ 16.02 mg/Sm³. Good within a few percent for sweet, lean gas; acid gases and heavy hydrocarbons change it. Pipeline specifications are often 4–7 lb/MMscf. Gas flow is entered at normal conditions and converted to scf at 60 °F.

Formula and method

$$W = 47484\frac{p_v}{P} + B, \quad \log_{10} B = \frac{-3083.87}{459.6 + T_F} + 6.69449$$

Variables

P	Gas pressure (absolute)	Pa
T	Gas temperature	K
Q	Gas flow (standard)	Nm³/s
W_t	Target water content (lb/MMscf)	-
W	Saturated water content (lb/MMscf)	-
W_{SI}	Saturated water content per standard m³ (15 °C)	kg/m³
$\dot{m}_w$	Water to remove	kg/s

Method and standards

Water content.

Assumptions and limits

- Sweet lean gas in equilibrium with liquid water.

References

Bukacek water content correlation

Report details

Report reference	FCC-C5F7-6RZ4 (the same inputs always give the same reference)
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Calculator	Natural Gas Water Content (Bukacek Correlation)
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Software release	FireCAD Calc, release of 22 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/chemical/oil-gas/natural-gas-water-content-bukacek

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.