NGL Liquid Content (GPM) of a Natural Gas

Liquid propane-plus content of a natural gas in US gallons per thousand standard cubic feet from mole fractions, and the potential liquid yield for a gas flow.

Method: GPM from composition with liquid molar volumes

Input parameters

Unit system: SI

Parameter	Value	Unit
Propane	4.0000	%
Isobutane	0.80000	%
n-Butane	1.2000	%
Isopentane	0.40000	%
n-Pentane	0.40000	%
Hexanes plus (as n-hexane)	0.50000	%
Gas flow	180,000	Nm³/h

Calculated results

Parameter	Value	Unit
C_3+ liquid content (US gal/Mscf)	2.2340	
C_4+ liquid content (US gal/Mscf)	1.1343	
Potential C_3+ liquid	56.817	m³/h

Notes for this case

• GPM_i = y_i·1000/379.49·(gal/lbmol)_i: 379.49 scf per lbmol at 60 °F and 14.696 psia; liquid gal/lbmol at 60 °F are standard physical constants (propane 10.433, isobutane 12.386, n-butane 11.937, isopentane 13.86, n-pentane 13.71, n-hexane 15.57). Rich gases above about 3 GPM justify NGL recovery; actual recovery depends on the process (propane 60–98 %).

Formula and method

$$GPM_i = \frac{1000 y_i}{379.49}\left(\frac{\text{gal}}{\text{lbmol}}\right)_i, \quad GPM = \sum_i GPM_i$$

Variables

y_{C_3}	Propane	-
y_{iC_4}	Isobutane	-
y_{nC_4}	n-Butane	-
y_{iC_5}	Isopentane	-
y_{nC_5}	n-Pentane	-
y_{C_6+}	Hexanes plus (as n-hexane)	-
Q	Gas flow	Nm³/s
GPM_{C_3+}	C_3+ liquid content (US gal/Mscf)	-
GPM_{C_4+}	C_4+ liquid content (US gal/Mscf)	-
$\dot{V}_L$	Potential C_3+ liquid	m³/s

Method and standards

Gas liquids content.

Assumptions and limits

- Ideal gas at 60 °F, 14.696 psia; hexanes plus treated as n-hexane.

References

GPM from composition with liquid molar volumes

Report details

Report reference	FCC-GY8T-2D6H (the same inputs always give the same reference)
Generated	23 November 2026, 17:42 UTC
Calculator	NGL Liquid Content (GPM) of a Natural Gas
Method last reviewed	17 November 2026
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

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Reopens the calculator with the inputs of this report.