PROPERTIES LIBRARY

Methane (CH4) calculation evidence pack

Calculated with Common SI output units.

Source and Validity

Field	Value
Material / fluid	Methane (CH4)
State point	T = 15.0 Celsius (288.15 K); p = 1.0 Atm (101325 Pa)
Output units	Common SI
Phase	supercritical_gas
Generated	2026-11-15 23:02
Source family	CoolProp
Confidence	Reference-grade
License	Open
Citation	CoolProp open-source property backend; fluid model: Methane.
Valid temperature	90.69 ... 625 K (Backend-defined range when available.)
Valid pressure	Backend equation-of-state domain; pressure limits are fluid/model dependent.
Valid phase / condition	Backend-calculated fluid state.
Uncertainty	Reference-grade for supported state points; backend errors or warnings indicate reduced confidence.
Last reviewed	2026-06-28
Reviewer	app.py metadata defaults

Calculated Properties

Property	Value
Molar mass	0.0160428 kg/mol
Specific gas constant	518.2675 J/kg/K
Heat capacity ratio	1.310
Density	0.6798 kg/m^3
Dynamic viscosity	1.088 * 10^-5 Pa*s
Kinematic viscosity	1.600 * 10^-5 m^2/s
Thermal conductivity	0.03277 W/m/K
Specific heat capacity, cp	2210.0 J/kg/K
Specific heat capacity, cv	1686.5 J/kg/K
Thermal diffusivity	2.181 * 10^-5 m^2/s
Prandtl number	0.7336
Speed of sound	441.502 m/s

Formulas Used

Quantity	Formula
Specific gas constant	R = Ru / M
Kinematic viscosity	nu = mu / rho
Heat capacity ratio	gamma = cp / cv
Thermal diffusivity	alpha = k / (rho * cp)
Prandtl number	Pr = cp * mu / k
Speed of sound	a = sqrt(gamma * R * T)