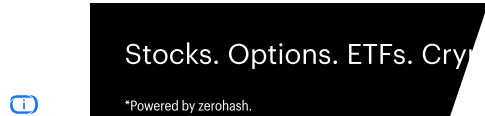




Propane - Thermophysical properties

Chemical, physical and thermal properties of propane gas - C₃H₈.

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Phase diagram of propane

Chemical, physical and thermal properties of Propane - C₃ H₈ :

(values at 25 °C (77 °F, 298 K) and atmospheric pressure)

Propane - Thermophysical properties

Molecular Weight	44.097
Specific Gravity of gas (air = 1)	1.52
Specific Volume (ft ³ /lb, m ³ /kg)	8.84, 0.552
Density of liquid at atmospheric pressure (lb/ft ³ , kg/m ³)	36.2, 580
Vapor pressure at 25 °C (psia, MN/m ²)	135.7, 0.936
Absolute Viscosity (lb _m /ft s, centipoises)	5.38×10 ⁻⁶ , 0.0074
Sound velocity in gas (m/s)	253
Specific Heat - c _p - (Btu/lb °F or cal/g °C, J/kgK)	0.39, 1630
Specific Heat Ratio - c _p /c _v	1.13
Gas constant - R - (ft lb/lb °R, J/kg °C)	35.0, 188

Thermal Conductivity (<i>Btu/hr ft °F, W/m°C</i>)	0.010, 0.017
Boiling Point - saturation pressure 14.7 psia and 760 mm Hg - (<i>°F, °C</i>)	-44, -42.2
Latent Heat of Evaporation at boiling point (<i>Btu/lb, J/kg</i>)	184, 428000
Freezing or Melting Point at 1 atm (<i>°F, °C</i>)	-309.8, -189.9
Latent Heat of Fusion (<i>Btu/lb, J/kg</i>)	19.1, 44400
Critical Temperature (<i>°F, °C</i>)	205, 96
Critical Pressure (<i>psia, MN/m²</i>)	618, 4.26
Critical Volume (<i>ft³/lb, m³/kg</i>)	0.073, 0.0045
Flammable	yes
Heat of combustion (<i>Btu/ft³, Btu/lb, kJ/kg</i>)	2450, 21660, 50340

See the following documents for changes in propane properties with *changes in pressure and temperature* :

- [Density and Specific Weight](#)
- [Dynamic and Kinematic Viscosity](#)
- [Prandtl Number](#)
- [Specific Heat \(Heat Capacity\)](#)
- [Thermal Conductivity](#)
- [Thermal Diffusivity](#)
- [Vapor Pressure at Gas-Liquid Equilibrium](#)

See also [more about atmospheric pressure](#), and [STP - Standard Temperature and Pressure & NTP - Normal Temperature and Pressure](#),

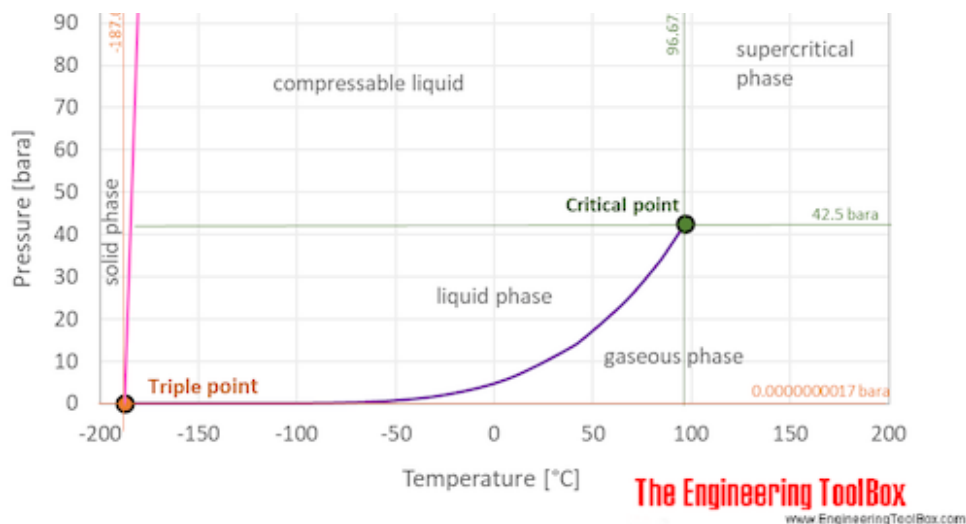
as well as **Thermophysical properties** of: [Acetone](#), [Acetylene](#), [Air](#), [Ammonia](#), [Argon](#), [Benzene](#), [Butane](#), [Carbon dioxide](#), [Carbon monoxide](#), [Ethane](#), [Ethanol](#), [Ethylene](#), [Helium](#), [Hydrogen](#), [Hydrogen sulfide](#), [Methane](#), [Methanol](#), [Nitrogen](#), [Oxygen](#), [Pentane](#), [Toluene](#), [Water](#) and [Heavy water, D₂O](#) .

Propane is a *gas* at standard conditions. However, at low temperature and/or high pressures the gas becomes a liquid (or a solid at very cold conditions).

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The phase diagram for propane shows the phase behavior with changes in temperature and pressure.



At the **critical point** there is no change of state when pressure is increased or if heat is added.

The **triple point** of a substance is the temperature and pressure at which the three phases (gas, liquid, and solid) of that substance coexist in thermodynamic equilibrium.

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Related Topics



Properties of gases, fluids and solids. Densities, specific heats, viscosities and more.

Related Documents

Acetone - Thermophysical Properties

Chemical, physical and thermal properties of acetone, also called 2-propanone, dimethyl ketone and pyroacetic acid. Phase diagram included.

Adiabatic Flame Temperatures

Adiabatic flame temperatures for hydrogen, methane, propane and octane - in Kelvin.

Benzene - Thermophysical properties

Chemical, physical and thermal properties of benzene, also called benzol. Phase diagram included.

Butane - Thermophysical Properties

Chemical, physical and thermal properties of n-Butane.

Combustion Heat

Heat of combustion (energy content) for some common substances - with examples how to calculate heat of combustion.

Energy Content in common Energy Sources

Heating fuels and their energy content.

Ethane - Thermophysical Properties

Chemical, Physical and Thermal Properties of Ethane - C₂H₆.

Ethylene - Thermophysical Properties

Chemical, physical and thermal properties of ethylene, also called ethene, acetene and olefiant gas. Phase diagram included.

Fuel Gases - Flame Temperatures

Adiabatic flame temperatures for common fuel gases - propane, butane, acetylene and more - in air or oxygen atmospheres.

Fuels and Chemicals - Autoignition Temperatures



Autoignition points for fuels and chemicals like butane, coke, hydrogen, petroleum and more.

Gases - Explosion and Flammability Concentration Limits

Flame and explosion limits for gases like propane, methane, butane, acetylene and more.

Higher Calorific Values of Common Fuels: Reference & Data

Higher and lower calorific values (heating values) for fuels like coke, oil, wood, hydrogen and others.

Hydrocarbons - Vapor Pressures

Vapor pressure vs. temperature for propane, n-butane, n-heptane and n-pentane hydrocarbons.

Liquids - Dynamic Viscosities

Absolute (dynamic) viscosity values for some common fluids.

LPG - Gas Properties

Liquefied Petroleum - LP - gas properties.

Pentane - Thermophysical Properties

Chemical, physical and thermal properties of pentane, also called n-pentane. Phase diagram included.

Propane - Density and Specific Weight vs. Temperature and Pressure



Online calculator, figures and tables showing density and specific weight of propane, C₃H₈, at temperatures ranging from -187 to 725 °C (-305 to 1300 °F) at atmospheric and higher pressure - Imperial and SI Units.

Propane - Dynamic and Kinematic Viscosity vs. Temperature and Pressure

Online calculators, figures and tables showing dynamic and kinematic viscosity of liquid and gaseous propane at varying temperature and pressure, SI and Imperial units.

Propane - Latent Heat of Vaporization vs. Temperature

Latent heat with vaporized propane.

Propane - Prandtl Number vs. Temperature and Pressure

Figures and tables with Prandtl Number of liquid and gaseous propane at varying temperature and pressure, SI and Imperial units.

Propane - Thermal Conductivity vs. Temperature and Pressure

Online calculator, figures and tables showing thermal conductivity of liquid and gaseous propane at varying temperature and pressure, SI and Imperial units.

Propane - Thermal Diffusivity vs. Temperature and Pressure

Figures and tables showing thermal diffusivity of liquid and gaseous propane at varying temperature and pressure, SI and Imperial units.

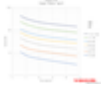
Propane - Vapor Pressure vs. Temperature



Vapor pressure vs. temperature.



Propane Gas - Sizing of Pipe Lines



Sizing low pressure propane gas pipe lines - Metric units.

Propane Gas Piping - Capacity vs. Size

Sizing of propane gas pipe lines with pressures above 5 psig (35 kPa).

Propane Gas Piping - Low Pressure Capacity vs. Size

Sizing of low pressure propane gas pipe lines - Imperial units.

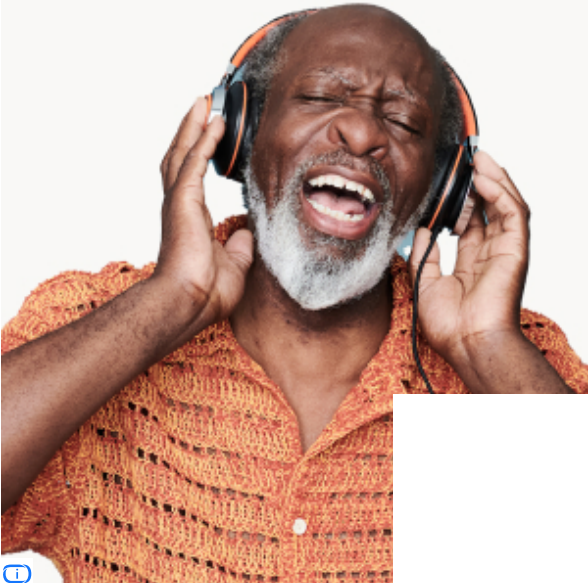
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- Standard Organizations



Unit Converter

Temperature

☒ °C☐ K☐ °F

Length

☒ m☐ km☐ in☐ ft☐ yards☐ miles☐ naut miles

Area

☒ m²☐ km²☐ in²☐ ft²☐ miles²☐ acres

Volume

☒ m³☐ liters☐ in³

☐ ft^3



1.0

☒ kg_f

☐ N

☐ lbf

Convert!

Velocity

1.0

☒ m/s

☐ km/h

☐ ft/min

☐ ft/s

☐ mph

☐ knots

Convert!

Pressure

1.0

☒ Pa

☐ bar

☐ atmosphere

☐ $\text{mm H}_2\text{O}$

☐ kg/cm^2

☐ psi

☐ $\text{inches H}_2\text{O}$

Convert!

Flow

1.0

☒ m^3/s

☐ m^3/h

☐ US gpm

☐ *cfm*



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