

Gas Fuel Physical Properties—8.5/12RES

Physical Property @ 15°C (60°F)	Butane	Propane	Natural Gas	Manufactured or Sewage Gas
Normal atmospheric state	Gas	Gas	Gas	Gas
Boiling point, Initial, °C (°F) End, °C (°F)	— 0 (32)	— 42 (-44)	— -162 (-259)	— —
Heating value, Btu/ gal. (net, LHV*) gal. (gross) ft. ³ (gas)	94670 102032 3264	83340 91500 2516	63310 — 1000	— — 600-700
Density, ft. ³ of gas/gal.	31.26	36.39	57.75	—
Wt./gal. liquid, lb.	4.81	4.24	2.65	—
Octane Number Research Motor	94 90	110+ 97	110+ —	— —
* Lower Heating Value				

Figure 1 Engine Gas Fuels, Physical Properties

Characteristic, LP Gas*	Butane	Propane
Formula	C ₄ H ₁₀	C ₃ H ₈
Boiling point, °C (°F)	0 (32)	-42 (-44)
Specific gravity of gas (air = 1.00)	2.00	1.53
Specific gravity of liquid (water = 1.00)	0.58	0.51
Btu/lb. of gas	21221	21591
Ft. ³ of vapor at 16°C (60°F)/lb. of liquid at 16°C (60°F)	6.506	8.547
Latent heat of vaporization at boiling point, Btu/gal.	808.0	785.0
Combustion Data: Ft. ³ air required to burn 1 ft. ³ of gas Flash point, °C (°F) Ignition temperature in air, °C (°F) Max. flame temperature in air, °C (°F)	31.02 N/A 482-538 (900-1000) 1991 (3615)	23.86 -104 (-156) 493-549 (920-1020) 1979 (3595)
Limits of inflammability, percentage of gas in air mixture: At lower limit, % At upper limit, %	1.9 8.6	2.4 9.6
Octane Number (ISO-Octane = 100)	92	Over 100
* Commercial quality. Figures shown in this chart represent average values.		

Figure 2 Additional LP Gas Characteristics

Gas Fuel Vapor Pressures

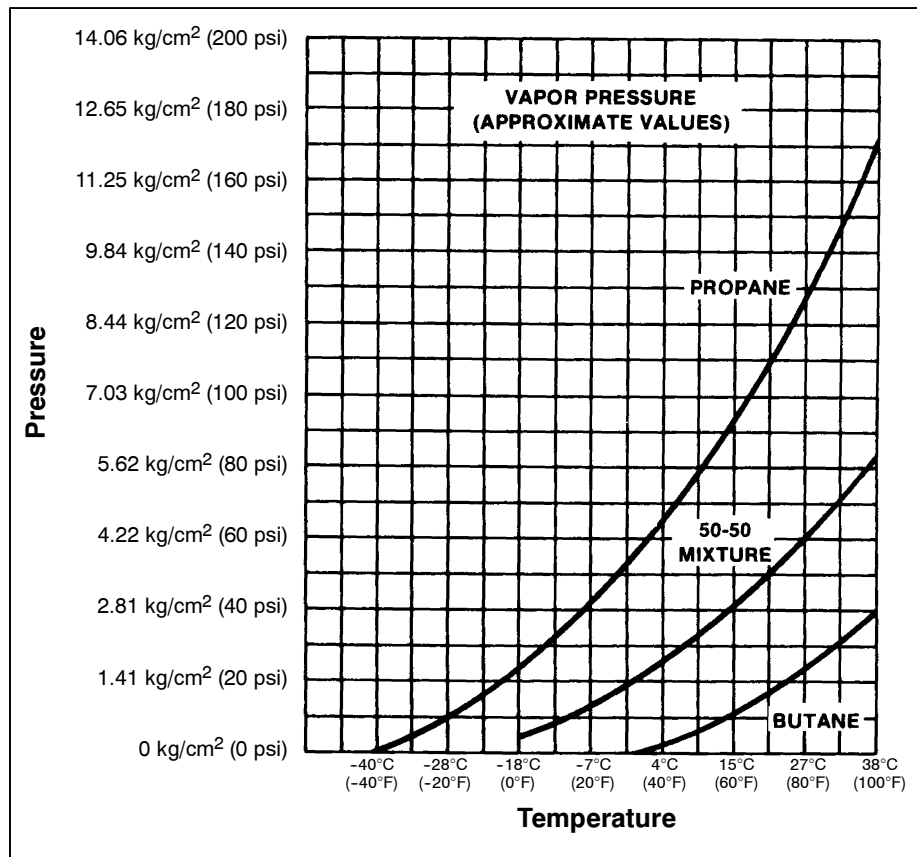


Figure 1 Vapor Pressures of LP Gases