

Heating Values of Fuels

TABLE F.1 Lower Heating Values for Various Fuels

Fuel	Notes	Btu/lb	Btu/ft ³	Btu/gal	kcal/kg	kcal/m ³	kcal/liter
Methane CH ₄	1	23,879	1,013		13,270	9,018	
Propane C ₃ H ₈	1	21,661	2,590	92,000	12,039	23,056	6,127
n-Butane C ₄ H ₁₀	1	21,308	3,370		11,843	29,959	
Natural Gas	1 & 2		975-1,090			8,679-9,703	
Fuel Oil #1		19,100-20,500		132,900-137,000	10,615-11,394		8,851-9,124
Fuel Oil #2		19,800-20,600		135,800-141,800	11,005-11,449		9,044-9,444
Fuel Oil #4	3	19,500-21,300		140,600-153,300	10,838-11,839		9,364-10,210
Fuel Oil #5	3	17,500-20,000		148,100-155,900	9,727-11,116		9,863-10,383
Fuel Oil #6	3	17,400-20,000		149,400-157,300	9,671-11,116		9,950-10,476
Bituminous coal		12,000-14,000			6,670-7,781		
Wood, 12% moisture	4	7,600-7,860	244,000-358,000		4,224-4,369	2,172,000-3,187,000	
Tree bark							
(pine, spruce)	5	9,000-9,500			5,002-5,280		
Rice hulls	5	6,000			3,335		
Flax/wheat straw	5	8,250-8,500			4,585-4,724		
Gasoline, naphtha, kerosene		17,540-20,630		107,000-154,000	9,749-11,466		7,126-10,296

Notes: 1. Btu/ft³ @ 60°F, 30 in. Hg absolute pressure.
 2. Natural gas in primarily methane plus a combination of other gases.
 3. Requires Preheating
 4. Values based on 22 to 32.2 million Btu/cord where 1 cord = 90 ft³ solid wood.
 5. By-product fuel.

Sources: Brooker, D. B., F. W. Bakker-Arkema, and C. W. Hall, 1974. Drying Cereal Grains. AVI, Westport, CT.
 Stout, B. A. 1983. Biomass Energy Profiles. Bulletin 54. FAO, Rome.