

Table 1: Thermal properties of gases and liquids at 1 atm pressure (101,325 Pa) and 293.15 K = 20°C = 68°F, similar to Thompson, Table F.2. (a) acetone, CH₃COCH₃ or 2-propanone, (b) biacetyl or diacetyl or 2,3 butadione. Values listed for gases were obtained using the Engineering Equation Solver (EES, University of Wisconsin). The specific heat ratio is provided based on an ideal gas law (IGL) calculation $\gamma(T)$, and where available, it is also provided based on JANAF data, $\gamma(P, T)$.

Gas	MW (g/gmol)	Gas Ct. R (J/kg/K)	γ JANAF	γ IGL	ρ (kg/m ³)	Sound Spd. c (m/s)	C_P (J/kg/K)	Viscosity μ (Pa·s)	P_v (Torr)
He	4.003	2077	1.667	1.667	0.1663	1008	5193	1.96e-5	
Ne	20.179	412	1.667	1.666	0.8383	448.9	1030	3.18e-5	
Ar	39.948	208.1	1.670	1.664	1.661	319	521.6	2.24e-5	
Kr	83.804	99.21	1.672	1.661	3.491	220.1	249.2	2.50e-5	
Xe	131.3	63.32	1.678	1.654	5.487	175.5	160.1	2.34e-5	
N ₂	28.013	296.8		1.399	1.164	348.9	1041	1.74e-5	
O ₂	31.999	259.8		1.392	1.33	325.6	922.5	2.03e-5	
air	28.967	287		1.399	1.204	343.1	1007	1.83e-5	
CO	28.01	296.8		1.398	1.164	348.8	1043	1.73e-5	
CO ₂	44.01	188.9		1.293	1.829	267.6	834.2	1.47e-5	
H ₂ O	18.016	461.5		1.327	0.7488	423.7	1872	9.68e-6	
SF ₆	146.054	56.92	1.100	1.094	6.143	133.9	661.2	1.60e-5	
R12	120.91	68.76	1.143	1.126	5.138	148.5	612.6	1.24e-5	
R22	86.469	96.15	1.188	1.172	3.65	180.1	656.5	1.27e-5	
R134a	102.032	81.48	1.122	1.107	4.335	160.1	843.8	1.17e-5	
C ₃ H ₆ O-a	58.08	143.1		1.125	2.416	217.2	1291.3	3.1e-4	180
C ₄ H ₆ O ₂ -b	86.09	96.57		1.072?	3.581	174.2?	1435.7?		40
H ₂ O				1.006	998.2	1,484	4,182	1.002e-3	17.5
Hg				1.146	13,600	1,450	139	1.554e-3	≈ 0