

Valores termodinámicos seleccionados a 298.15 K

APÉNDICE

K

Especie	ΔH_f^0 (kJ/mol)	S^0 (J/mol · K)	ΔG_f^0 (kJ/mol)	Especie	ΔH_f^0 (kJ/mol)	S^0 (J/mol · K)	ΔG_f^0 (kJ/mol)
Aluminio				CaH ₂ (s)	-189	42	-150
Al(s)	0	28.3	0	CaO(s)	-635.5	40	-604.2
AlCl ₃ (s)	-704.2	110.7	-628.9	CaS(s)	-482.4	56.5	-477.4
Al ₂ O ₃ (s)	-1676	50.92	-1582	Ca(OH) ₂ (s)	-986.6	76.1	-896.8
Azufre				Ca(OH) ₂ (ac)	-1002.8	76.15	-867.6
S(s, rómbico)	0	31.8	0	CaSO ₄ (s)	-1433	107	-1320
S(g)	278.8	167.8	238.3	Carbono			
S ₂ Cl ₂ (g)	-18	331	-31.8	C(s, grafito)	0	5.740	0
SF ₆ (g)	-1209	291.7	-1105	C(s, diamante)	1.897	2.38	2.900
H ₂ S(g)	-20.6	205.7	-33.6	C(g)	716.7	158.0	671.3
SO ₂ (g)	-296.8	248.1	-300.2	CCl ₄ (ℓ)	-135.4	216.4	-65.27
SO ₃ (g)	-395.6	256.6	-371.1	CCl ₄ (g)	-103	309.7	-60.63
SOCl ₂ (ℓ)	-206	—	—	CHCl ₃ (ℓ)	-134.5	202	-73.72
SO ₂ Cl ₂ (ℓ)	-389	—	—	CHCl ₃ (g)	-103.1	295.6	-70.37
H ₂ SO ₄ (ℓ)	-814.0	156.9	-690.1	CH ₄ (g)	-74.81	186.2	-50.75
H ₂ SO ₄ (ac)	-907.5	17	-742.0	C ₂ H ₂ (g)	226.7	200.8	209.2
Bario				C ₂ H ₄ (g)	52.26	219.5	68.12
BaCl ₂ (s)	-860.1	126	-810.9	C ₂ H ₆ (g)	-84.86	229.5	-32.9
BaSO ₄ (s)	-1465	132	-1353	C ₃ H ₈ (g)	-103.8	269.9	-23.49
Berilio				C ₆ H ₆ (ℓ)	49.03	172.8	124.5
Be(s)	0	9.54	0	C ₈ H ₁₈ (ℓ)	-268.8	—	—
Be(OH) ₂ (s)	-907.1	—	—	C ₂ H ₅ OH(ℓ)	-277.7	161	-174.9
Bromo				C ₂ H ₅ OH(g)	-235.1	282.6	-168.6
Br(g)	111.8	174.9	82.4	CO(g)	-110.5	197.6	-137.2
Br ₂ (ℓ)	0	152.23	0	CO ₂ (g)	-393.5	213.6	-394.4
Br ₂ (g)	30.91	245.4	3.14	CS ₂ (g)	117.4	237.7	67.15
BrF ₃ (g)	-255.6	292.4	-229.5	COCl ₂ (g)	-223.0	289.2	-210.5
HBr(g)	-36.4	198.59	-53.43	Cesio			
Calcio				Cs ⁺ (ac)	-248	133	-282.0
Ca(s)	0	41.6	0	CsF(ac)	-568.6	123	-558.5
Ca(g)	192.6	154.8	158.9	Cloro			
Ca ²⁺ (g)	1920	—	—	Cl(g)	121.7	165.1	105.7
CaC ₂ (s)	-62.8	70.3	-67.8	Cl ⁻ (g)	-226	—	—
CaCO ₃ (s)	-1207	92.9	-1129	Cl ₂ (g)	0	223.0	0
CaCl ₂ (s)	-795.0	114	-750.2	HCl(g)	-92.31	186.8	-95.30
CaF ₂ (s)	-1215	68.87	-1162	HCl(ac)	-167.4	55.10	-131.2

Especie	ΔH_f° (kJ/mol)	S° (J/mol · K)	ΔG_f° (kJ/mol)	Especie	ΔH_f° (kJ/mol)	S° (J/mol · K)	ΔG_f° (kJ/mol)
Cobre				Mg(OH) ₂ (s)	−924.7	63.14	−833.7
Cu(s)	0	33.15	0	MgS(s)	−347	—	—
CuO(s)	−157	42.63	−130	Mercurio			
Cromo				Hg(ℓ)	0	76.02	0
Cr(s)	0	23.8	0	HgCl ₂ (s)	−224	146	−179
(NH ₄) ₂ Cr ₂ O ₇ (s)	−1807	—	—	HgO(s, rojo)	−90.83	70.29	−58.56
Estaño				HgS(s, rojo)	−58.2	82.4	−50.6
Sn(s, blanco)	0	51.55	0	Níquel			
Sn(s, gris)	−2.09	44.1	0.13	Ni(s)	0	30.1	0
SnCl ₂ (s)	−350	—	—	Ni(CO) ₄ (g)	−602.9	410.4	−587.3
SnCl ₄ (ℓ)	−511.3	258.6	−440.2	NiO(s)	−244	38.6	−216
SnCl ₄ (g)	−471.5	366	−432.2	Nitrógeno			
SnO ₂ (s)	−580.7	52.3	−519.7	N ₂ (g)	0	191.5	0
Flúor				N(g)	472.704	153.19	455.579
F [−] (g)	−322	—	—	NH ₃ (g)	−46.11	192.3	−16.5
F [−] (ac)	−332.6	—	−278.8	N ₂ H ₄ (ℓ)	50.63	121.2	149.2
F(g)	78.99	158.6	61.92	(NH ₄) ₃ AsO ₄ (ac)	−1268	—	—
F ₂ (g)	0	202.7	0	NH ₄ Cl(s)	−314.4	94.6	−201.5
HF(g)	−271	173.7	−273	NH ₄ Cl(ac)	−300.2	—	—
HF(ac)	−320.8	—	−296.8	NH ₄ I(s)	−201.4	117	−113
Fósforo				NH ₄ NO ₃ (s)	−365.6	151.1	−184.0
P(g)	314.6	163.1	278.3	NO(g)	90.25	210.7	86.57
P ₄ (s, blanco)	0	177	0	NO ₂ (g)	33.2	240.0	51.30
P ₄ (s, rojo)	−73.6	91.2	−48.5	N ₂ O(g)	82.05	219.7	104.2
PCl ₃ (g)	−306.4	311.7	−286.3	N ₂ O ₄ (g)	9.16	304.2	97.82
PCl ₅ (g)	−398.9	353	−324.6	N ₂ O ₅ (g)	11	356	115
PH ₃ (g)	5.4	210.1	13	N ₂ O ₅ (s)	−43.1	178	114
P ₄ O ₁₀ (s)	−2984	228.9	−2698	NOCl(g)	52.59	264	66.36
H ₃ PO ₄ (s)	−1281	110.5	−1119	HNO ₃ (ℓ)	−174.1	155.6	−80.79
Hidrógeno				HNO ₃ (g)	−135.1	266.2	−74.77
H(g)	218.0	114.6	203.3	HNO ₃ (ac)	−206.6	146	−110.5
H ₂ (g)	0	130.6	0	Oxígeno			
H ₂ O(ℓ)	−285.8	69.91	−237.2	O(g)	249.2	161.0	231.8
H ₂ O(g)	−241.8	188.7	−228.6	O ₂ (g)	0	205.0	0
H ₂ O ₂ (ℓ)	−187.8	109.6	−120.4	O ₃ (g)	143	238.8	163
Hierro				OF ₂ (g)	23	246.6	41
Fe(s)	0	27.3	0	Plata			
FeO(s)	−272	—	—	Ag(s)	0	42.55	0
Fe ₂ O ₃ (s, hematita)	−824.2	87.40	−742.2	Plomo			
Fe ₃ O ₄ (s, magnetita)	−1118	146	−1015	Pb(s)	0	64.81	0
FeS ₂ (s)	−177.5	122.2	−166.7	PbCl ₂ (s)	−359.4	136	−314.1
Fe(CO) ₅ (ℓ)	−774.0	338	−705.4	PbO(s, amarillo)	−217.3	68.70	−187.9
Fe(CO) ₅ (g)	−733.8	445.2	−697.3	Pb(OH) ₂ (s)	−515.9	88	−420.9
Litio				PbS(s)	−100.4	91.2	−98.7
Li(s)	0	28.0	0	Potasio			
LiOH(s)	−487.23	50	−443.9	K(s)	0	63.6	0
LiOH(ac)	−508.4	4	−451.1	KCl(s)	−436.5	82.6	−408.8
Magnesio				KClO ₃ (s)	−391.2	143.1	−289.9
Mg(s)	0	32.5	0	KI(s)	−327.9	106.4	−323.0
MgCl ₂ (s)	−641.8	89.5	−592.3	KOH(s)	−424.7	78.91	−378.9
MgO(s)	−601.8	27	−569.6	KOH(ac)	−481.2	92.0	−439.6

Especie	ΔH_f^0 (kJ/mol)	S^0 (J/mol · K)	ΔG_f^0 (kJ/mol)	Especie	ΔH_f^0 (kJ/mol)	S^0 (J/mol · K)	ΔG_f^0 (kJ/mol)
Rubidio				NaCl(s)	−411.0	72.38	−384
Rb(s)	0	76.78	0	NaCl(ac)	−407.1	115.5	−393.0
RbOH(ac)	−481.16	110.75	−441.24	Na ₂ CO ₃ (s)	−1131	136	−1048
Silicio				NaOH(s)	−426.7	—	—
Si(s)	0	18.8	0	NaOH(ac)	−469.6	49.8	−419.2
SiBr ₄ (ℓ)	−457.3	277.8	−443.9	Titanio			
SiC(s)	−65.3	16.6	−62.8	TiCl ₄ (ℓ)	−804.2	252.3	−737.2
SiCl ₄ (g)	−657.0	330.6	−617.0	TiCl ₄ (g)	−763.2	354.8	−726.8
SiH ₄ (g)	34.3	204.5	56.9	Wolframio			
SiF ₄ (g)	−1615	282.4	−1573	W(s)	0	32.6	0
SiI ₄ (g)	−132	—	—	WO ₃ (s)	−842.9	75.90	−764.1
SiO ₂ (s)	−910.9	41.84	−856.7	Yodo			
H ₂ SiO ₃ (s)	−1189	134	−1092	I(g)	106.6	180.66	70.16
Na ₂ SiO ₃ (s)	−1079	—	—	I ₂ (s)	0	116.1	0
H ₂ SiF ₆ (ac)	−2331	—	—	I ₂ (g)	62.44	260.6	19.36
Sodio				ICl(g)	17.78	247.4	−5.52
Na(s)	0	51.0	0	HI(g)	26.5	206.5	1.72
Na(g)	108.7	153.6	78.11	Zinc			
Na ⁺ (g)	601	—	—	ZnO(s)	−348.3	43.64	−318.3
NaBr(s)	−359.9	—	—	ZnS(s)	−205.6	57.7	−201.3