

Table 1. Standard molar Enthalpy change of formation at 25 °C

Inorganic compounds	$\Delta H_f^0$ kJ/mol	Organic compounds	$\Delta H_f^0$ kJ/mol
H <sub>2</sub> O (g)	-241.818	Methane	CH <sub>4</sub> (g) -74.85
H <sub>2</sub> O (l)	-285.830	Ethane	C <sub>2</sub> H <sub>6</sub> (g) -83.85
HF (g)	-268.6	Ethene/Ethylene	C <sub>2</sub> H <sub>4</sub> (g) +52.51
HCl (g)	-92.3	Ethyne/Acetylene	C <sub>2</sub> H <sub>2</sub> (g) +227.48
NaCl (s)	-411.0	Propane	C <sub>3</sub> H <sub>8</sub> (g) -104.68
CaO (s)	-635.09	<i>n</i> -butane	C <sub>4</sub> H <sub>10</sub> (g) -125.65
CaCO <sub>3</sub> (s. calcite)	-1206.92	<i>n</i> -hexane	C <sub>6</sub> H <sub>14</sub> (l) -167.2
CO (g)	-110.53	Benzene	C <sub>6</sub> H <sub>6</sub> (l) +49.08
CO <sub>2</sub> (g)	-393.51	Methanol	CH <sub>3</sub> OH (l) -238.66
NO (g)	+90.25	Ethanol	C <sub>2</sub> H <sub>5</sub> OH (l) -277.69
NH <sub>3</sub> (g)	-46.11	Formic/methanoic acid	HCOOH (l) -409.2
SO <sub>2</sub> (g)	-296.83	Acetic/ethanoic acid	CH <sub>3</sub> COOH (l) -484.5
SO <sub>3</sub> (g)	-395.72	Chloroform	CHCl <sub>3</sub> (l) -131.8

Table 2. Standard molar Gibbs free energy change of formation at 25 °C

Inorganic compounds	$\Delta G_f^0$ kJ/mol	Organic compounds	$\Delta G_f^0$ kJ/mol
H <sub>2</sub> O (l)	-237.129	Methane	CH <sub>4</sub> (g) -50.8
H <sub>2</sub> O (g)	-228.572	Ethane	C <sub>2</sub> H <sub>6</sub> (g) -31.95
HF (g)	-270.7	Ethene/Ethylene	C <sub>2</sub> H <sub>4</sub> (g) +68.43
HCl (g)	-95.30	Ethyne/Acetylene	C <sub>2</sub> H <sub>2</sub> (g) +209.97
HI (g)	+1.72	Propane	C <sub>3</sub> H <sub>8</sub> (g) -24.40
CO (g)	-137.15	<i>n</i> -butane	C <sub>4</sub> H <sub>10</sub> (g) -16.56
CO <sub>2</sub> (g)	-394.36	<i>n</i> -hexane	C <sub>6</sub> H <sub>14</sub> (l) +35.0
NH <sub>3</sub> (g)	-16.48	Benzene	C <sub>6</sub> H <sub>6</sub> (l) +124.42
NO (g)	+86.552	Methanol	CH <sub>3</sub> OH (l) -166.35

**Table 3. Standard molar Entropy at 25 °C**

	$S^{\circ}$ J/(mol·K)		$S^{\circ}$ J/(mol·K)
H (g)	114.6	HF (g)	173.8
H <sub>2</sub> (g)	130.7	HCl (g)	186.9
O <sub>2</sub> (g)	205.0	HBr (g)	198.7
O <sub>3</sub> (g)	237.6	HI (g)	206.6
Cl <sub>2</sub> (g)	222.9	H <sub>2</sub> S (g)	205.8
Br <sub>2</sub> (g)	245.2	NO (g)	210.8
Br <sub>2</sub> (l)	152.3	NO <sub>2</sub> (g)	240.1
I <sub>2</sub> (g)	260.6	CaO (s)	39.7
I <sub>2</sub> (s)	116.7	CaCO <sub>3</sub> (s)	92.9
N <sub>2</sub> (g)	191.5	CH <sub>4</sub> (g)	186.3
H <sub>2</sub> O (g)	188.8	C <sub>2</sub> H <sub>2</sub> (g)	200.9
H <sub>2</sub> O (l)	69.9	C <sub>2</sub> H <sub>4</sub> (g)	219.4
H <sub>2</sub> O <sub>2</sub> (l)	109.6	C <sub>2</sub> H <sub>6</sub> (g)	229.2
CO (g)	197.9	C <sub>3</sub> H <sub>8</sub> (g)	270.3
CO <sub>2</sub> (g)	213.6	C <sub>6</sub> H <sub>6</sub> (g)	269.2
NH <sub>3</sub> (g)	192.5	C <sub>6</sub> H <sub>6</sub> (l)	173.4

**Table 4. Average bond energies**

Bond	Energy kJ/mol
H-H	436
C-H	415
N-H	390
O-H	460
C-C	347
C-N	285
C-O	352
N-N	159
C=C	610
C=N	615
C=O	730
N=N	418
O=O	494
C≡C	830
C≡N	887
N≡N	946