Table 13-4

Enthalpies of Reaction

Heats of Solution in Liquid Iron or Steel

(for heats of decomposition, change sign)

Reaction	Heat Effect, Kcal per Kg of:	
Al(liquid) = Al(dissolved)	-555.94	Al
C(graphite) = C(dissolved)	451.33 + 31 x % C	C
Mn(liquid) = Mn(dissolved)	0	Mn
1/2 02(gas) = 0(dissolved)	-1750.07	0
1/2 P2(gas) = P(dissolved)	-942.73	P
1/2 S2(gas) = S(dissolved)	-983.03	S
Si(liquid) = Si(dissolved)	-1246.17 + 80 x%C + 34x % Si	Si

Heats of Formation of Compounds from Elements at 298°K, Kilocalories

Compound	Heat of formation per Kg of:		Heat of formation per Kg.of:	
Al_2O_3	-7405.49	Al	-3919.18	Al_2O_3
CO	-2199.83	C	- 943.23	CO
CO_2	-7830.97	C	-2137.01	CO_2
CaC_2	- 351.80	Ca	- 219.97	CaC_2
Ca0	-3779.94	Ca	-2701.50	Ca0
CaS	-3131.24	Ca	-1739.67	CaS
Fe_3C	+ 497.92	C	+ 33.30	Fe_3C
Fe0	-1142.35	Fe	- 887.96	Fe0
Fe_2O_3	-1761.86	Fe	-1232.31	Fe_2O_3
Fe_3O_4	-1598.33	Fe	-1156.55	Fe_3O_4
Fe_3P	-1801.74	P	- 281.08	Fe_3P
FeS	-1194.64	S	- 435.67	FeS
FeSi	- 343.78	Fe	- 683.52	Si
Mn0	-1674.55	Mn	-1296.87	Mn0
P_2O_5	-6299.64	P	-2749.05	P_2O_5
SiC	- 534.00	Sí	- 374.06	SiC
SiO_2	-7693.09	Si	-3596.27	SiO_2

Heats of Formation of Inter-oxide Compounds (from oxides), Kilocalories

Compounds	Heat of Formation	per Kg of:
$Ca_3Al_2O_6$	- 15.96	Al_2O_3
$CaCO_3$	- 973.64	CO_2
$Fe_2Ca_2O_5$	- 46.34	Fe_2O_3
$Ca_4P_2O_9$	-1218.10	P_2O_5
Ca_2SiO_4	- 502.58	SiO_2
$1/2S_2+CaO=1/2O_2+CaS$	(+890.18	S
	(+395.61	CaS