

Example to Calculate Heat of Formation of Coal

Wt% As Received		Wt% dry	Wt% (daf)	
C	68.0	71.6	80.00	80.00
H	4.3	4.5	5.00	5.00
O	8.5	8.9	10.00	10.00
N	1.3	1.3	1.47	1.47
S	3.0	3.2	3.53	3.53
Ash	10.0	10.5		
moist	5.0			
Sum	100.0	100.0	100.0	100.0

High heating value= 14,100 Btu/lb (daf) 7,833 cal/g 32,775 J/g

Basis: 100 g

	mass	moles	product	stoich coef	moles	delH_f proc (kJ/mol)	moles*delH_f
C	80.00	6.666667	CO2	1	6.67	-393.5	-2623.33
H	5.00	5.00	H2O (liq)	0.5	2.5	-285.84	-714.6
O	10.00	0.625	O2	0.5	0.313	0	0
N	1.47	0.105	N2	0.5	0.053	0	0
S	3.53	0.110	SO2	1	0.110	-296.9	-32.7463
Sum=							-3370.68 kJ/100 g of coal

Heat of combustion= -32.7747 kJ/g

DelH_form prod= -33.7068 kJ/g

Delh_form coal= -0.932 kJ/g
-223 cal/g
-401 Btu/lb