COMPOSITION AND CALORIFIC VALUE OF SOLID FUELS (APPROXIMATIONS)

Fuel	Bulk weight of 1 m^3 – kg	Density	Composition by weight				Gross Calorific Value MJ/kg
			Carbon	Hydrogen	Oxygen	Ash	
High volatile	750	1.2	87	5	4	4	34.75
Medium volatile	to	to	85	5	6	4.5	33.91
Low volatile	800	1.35	75	5	10	5	29.30
Anthracite	900	1.35	90	3	3	4	33.49
Fibrous lignite	600 to		70	5	18	5	26.79
Browncoal	700		57	3.1	20	3.3	22.39
Dry peat	300 to 400	0.4	56	6	30	8	20.93
Dry wood	350 to 450	0.6	50	5	40	5	15.70
Coke	425		88	-	-	12	29.72

Approximate formula for combustion air req1uirements : Wa = Wp-1 in kg/kg of fuel

Wp = $\frac{GCVx6.4488}{CO_2\%}$ **= Weight of humid products** **1 MJ/kg = 238.8 kcal/kg**

Example : Wp = $\frac{33.91x6.4488}{11}$

= 19.9 kg of products/kg of low volatile coal **Wa = 19.9 – 1 = 18.9 kg/kg of air**

Volume of air at 20°C = 18.9 : 1.2 = 15.75 m^3 of air/kg.