W1.62

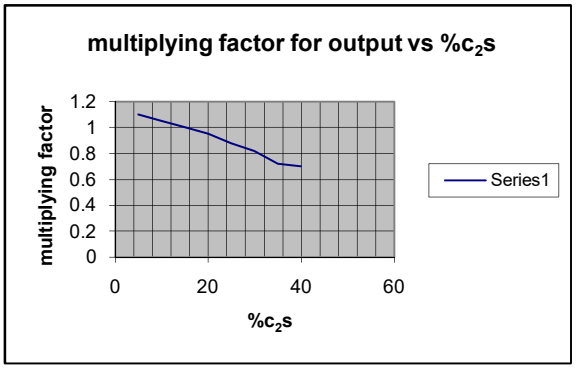
Effect of C_2S on grindability and power consumption

1 Effect of C_2S

Table 1

% C_2S in clinker	multiplying factor for output	for sp. Power
5	1.1	0.91
10	1.05	0.95
15	**1**	**1.00**
20	0.95	1.05
25	0.88	1.14
30	0.82	1.22
35	0.72	1.39
40	0.7	1.43

Graph 1



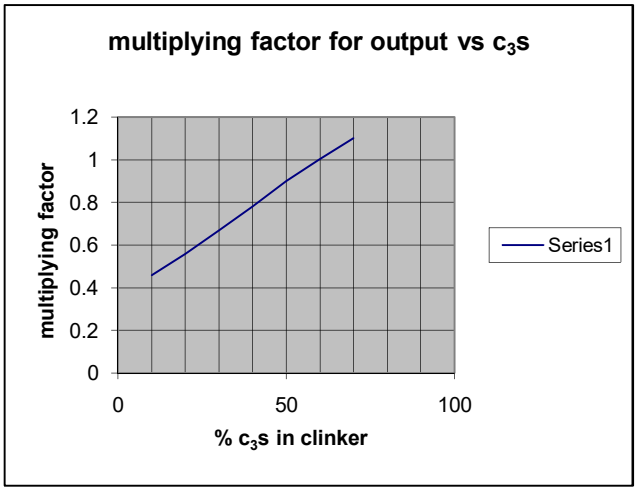
2 Effect of C_3S

In reverse effect, increase in C_3S, results in reduction in power required to grind.

Table 2

C_3S content in %	multiplying factor for output
10	0.46
20	0.56
30	0.67
40	0.78
50	0.9
60	1
70	1.1

Graph 2



other values can be obtained by intra/extra polation
50 % increase in C_3S could result in an increase of 25-28 % in output

3 Lime saturation factor

An increase in lime saturation factor also increases output.
lime saturation factor is expressed as Kind modulus (KM)
$KM=(100CaO-(1.65Al_2O_3+0.35Fe_2O_3))/2.8SiO_2$

Table 3

LSR as KM	grindability coefficient
60	
70	0.5
80	0.75
90	1
100	1.1

4 Moisture in clinker affects grindability.
Wet clinker requires more power to grind than dry clinker
between finenesses of 60- 95% passing 170 mesh
increase in energy for grinding also increases with fineness of product
For example:

	blaine		
	1 % moisture		
	2500	2700	2900
kwh/t	27.5	31.5	37
	2 % moisture		
kwh/t	31	36	43

source: Duda Cement Data Book