Slagging and Fouling Indices

Index	Formula	Slagging or Fouling Propensity			
		Low	Medium	High	Severe
Ash Fusion	Sphere (softening) temperature under reducing conditions	>1350		<1350	
Base - Acid Ratio	$\frac{Fe_2+CaO+MgO+Na_2O+K_2O}{SiO_2+Al_2O_3+TiO_2}$	<0.4 or > 0.7		0.4 to 0.7	
Slagging Factor	$\frac{Base}{Acid} \times Sulphur\ in\ coal\ (d\%)$ for bituminous ash (Fe_2O_3 > CaO + MgO	<0.6	0.6 to 2.0	2.0 to 2.6	>2.6
T_{250} Temperature °C	$T_{250}\ °C = [\frac{(M \times 10^7)}{\log(250) - C}]^{0.5} + 150$ where $C = 0.0415 \times SiO_2 + 0.0192 \times Al_2O_3 + 0.276 \times Fe_2O_3 + 0.0160 \times CaO - 3.92$ $M = 0.00835 \times SiO_2 + 0.00601 \times Al_2O_3 - 0.109$	>1400	1400 to 1245	1245 to 1120	<1120
Iron Calcium ratio	$\frac{Fe_2O_3}{CaO}$	<0.3 or > 3.0	0.3 to 3.0		
Iron plus Calcium	Fe_2O_3+CaO	<10%			
Slagging Index, °C	$\frac{((\max\ HT)+4\times(\min\ IT))}{5}$ where max HT is the highest value of the hemisphere ash fusion temperature under reducing or oxidising conditions and min IT is the lowest initial deformation temperature under reducing or oxidising conditions	>1340	1340 to 1230	1230 to 1150	<1150
Silica Percentage	$\frac{SiO_2 \times 100}{SiO_2+Fe_2O_3+CaO+MgO}$	72-80	65-72		50-65