

CERTIFICATE
Chemical composition and physical properties for
Portland Clinker
Cement Clinker C-150 Type 1 ASTM – CPC50 TCVN

Characteristic	Units	Criteria conform with ASTM C150 Type I	Typical Test Result	Test Method
SiO ₂	%	Max 22.5	21.86	ASTM C114-09
Al ₂ O ₃	%	Max 6.0	5.31	
Fe ₂ O ₃	%	Max 4.5	3.43	
CaO	%	Min 65.0	66.34	
MgO	%	Max 4.00	0.72	
SO ₃	%	Max 1.0	0.3	
Loss on Ignition, (LOI)	%	Max 1.5	0.75	
Free lime (F.CaO)	%	Max 1.5	1.4	
Insoluble Residue	%	Max 0.75	0.42	
Total alkalies (Na ₂ O+0.658K ₂ O)	%	Max 0.6	0.55	
C3S	%	Min 55.0	63.18	ASTM C150-11
C ₂ S	%	Max 21.5	15.18	Calculated
C ₃ A	%	Max 12.0	8.28	
C ₄ AF	%	Max 13.0	10.44	
Lime Saturation Factor – LSF	%	Min 92	95.15	
Moisture	%	Max 1.0	0.01	Refer ASTM C136
Particle Size: -Below 1mm	%	Max 10.0	7.82	Sieve
- Above 30 mm	%	Max 10.0	6.5	

Remark: C3S to be calculated based on gross CaO content.

$$C3S = (4.071x \%CaO) - (7.60x \%SiO_2) - (6.718 x Al_2O_3) - (1.43 x \%Fe_2O_3) - (2.852xSO_3)$$

$$C2S = (2.867x\% SiO_2) - (0.7544x \% C3S)$$

$$C3A = (2.650x \%Al_2O_3) - (1.692x Fe_2O_3); \quad C4AF = 3.043 x \% Fe_2O_3$$

$$LSF = (100 x \% CaO) / (2.8 x \%SiO_2 + 1.18 x \%Al_2O_3 + 0.65 x \% Fe_2O_3)$$

