

CERTIFICATE

Chemical composition and physical properties for Portland Clinker (High Quality)

NO	DESCRIPTION		UNIT	VALUE	Range
CHEMICAL COMPOSITION					
1	Silicon Dioxide	SiO ₂	%	20.8	20.0 – 21.4
2	Aluminum Oxide	Al ₂ O ₃	%	5.8	5.5 – 6.0
3	Ferric Oxide	Fe ₂ O ₃	%	4.35	3.75 – 4.15
4	Calcium Oxide	CaO	%	66.45	64.9 – 65.9
5	Magnesium Oxide	MgO	%	1.00	0.8 – 1.4
6	Sulfur Trioxide	SO ₃	%	0.75	0.7 – 1.2
7	Chloride	Cl ⁻ < 0.1	%	0.04	0.02- 0.07
8	Loss On ignition	L.O.I	%	0.3	0.28 -0.5
9	Insoluble residue	IR	%	0.35	0.2 -0.5
10	Free-Lime	F-CaO < 2	%	1.2	0.4- 1.8
11	Chromium Hexavalent	Cr VI ≤ 2	ppm	1.4	0.8- 1.6
12	Total Alkali		%	0.67	0.58 -0.75
MODULES					
	Lime Saturation Factor	LSF		96.38	95-98
	Silica Modulus	SM		2.10	2 -2.15
	Alumina Modulus	AM		1.33	1.3 -1.6
PHASE COMPOSITION					
	Tri Calcium Silicate	C ₃ S > 52	%	61.0	>60
	Di Calcium Silicate	C ₂ S	%	13.67	10 - 15
	Tri Calcium Aluminates	C ₃ A	%	8.02	7.0 – 9.5
	Tetra Calcium Aluminum Ferrite	C ₄ AF	%	13.22	11.5 – 14.0
Average sieve analysis					
	Residue %			Sieve analysis size	
	15 – 20 % dust			From 1 mm to 2 mm	
	50 %			From 3 mm to 1 cm	
	30 %			More than 1 cm	
	0 %			More than 4cm	

