

CERTIFICATE

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

NO	DESCRIPTION	UNIT	VALUE
CHEMICAL COMPOSITION			
1	Silicon Dioxide	SiO ₂	% 20.9 21.02 – 21.4
2	Aluminum Oxide	Al ₂ O ₃	% 6 5.9 – 6.2
3	Ferric Oxide	Fe ₂ O ₃	% 4.15 3.75 – 4.15
4	Calcium Oxide	CaO	% 66.2 64.9 – 65.9
5	Magnesium Oxide	MgO	% 1.0 0.8 – 1.4
6	Sulfur Trioxide	SO ₃	% 0.75 0.65 – 1.4
7	Chloride	Cl ⁻ < 0.1	% 0.04 0.02- 0.09
8	Loss On ignition	L.O.I	% 0.32 0.28 -0.6
9	Insoluble residue	I.R	% 0.3 0.2 -0.5
10	Free-Lime	F-CaO < 2	% 0.8 0.4- 1.8
11	Chromium Hexavalent	Cr VI ≤ 2	ppm 1.0 0.8 - 1.6
12	Total Alkali		% 0.58 - 0.75
MODULES			
	Lime Saturation Factor	LSF	% 95.76 94 - 97
	Silica Modulus	SM	% 2.06 2.0 -2.2
	Alumina Modulus	AM	% 1.45 1.3 -1.6
PHASE COMPOSITION			
	Tri Calcium Silicate	C ₃ S > 57	% 59.00 57 – 60
	Di Calcium Silicate	C ₂ S	% 15.48 12.5 – 16
	Tri Calcium Aluminates	C ₃ A	% 8.89 7.8 - 10
	Tetra Calcium Aluminum Ferrite	C ₄ AF	% 12.62 11.5 – 13.5
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	

