QUALITY CERTIFICATE

SINAI CEMENT CO. (QUALITY CONTROL & LABS).

Portland cement
Class: CEM I 52.5 N

Q.C Department

Specification: ES 4756-1:2013
Standard: BS EN 197-1:2011
EC-Certificate of Conformity 0770-CPD-2095-01-02

Period : May. 1st -31th 2021
Customer: To Whom It May Concern

We declare, on the basis of the below analysis, that the cement covered by the certificate conforms to annex ZA of EN 197-1 with conformity established according to EN 197-2 as given in annex ZA of EN 197-1.

Chemical Composition - Norm: EN196-2:2013		Results	Standard Requirements Maximum
Silicon Oxide	SiO_2	20.15%	
Aluminum Oxide	Al_2O_3	5.36%	
Ferric Oxide	Fe_2O_3	3.65%	
Calcium Oxide	Cao	63.54%	
Magnesium Oxide	MgO	0.51%	
Sulphate	SO_3	3.03%	3.5%
Potassium Oxide	K_2O	0.18%	
Sodium Oxide	Na_2O	0.35%	
Chloride	Cl	0.05%	0.1%
Insoluble Residue	IR	0.38%	5.0%
Loss On Ignition	LOI	2.52%	5.0%
Free Lime	F.L	1.52%	
Tricalcium Silicate	C_3S	49.41%	
Dicalcium Silicate	C_2S	20.51%	
Tricalcium Aluminates	C_3A	8.01%	
Tetra calcium Aluminoferrate	C_4AF	11.11%	
Alkali Equivalent	AE	0.47%	
Chromium Hexavalent	Cr+6	1.3 ppm	

Physical and Mechanical Properties Compressive Strength - Norm: EN196-1:2005	Results	Standard Requirements Minimum
2 days	21.1	20.0 Mpa
28 days	54.1	52.5 Mpa

Setting Time-Norm: EN196-3:2017-03	Results	Standard Requirements
Initial Time	133	45 minutes minimum
Final Time	2:47	Hours
Standard Consistency	26.5%	

Soundness(Expansion)-Norm: EN196-3:2017-03 Fineness-Norm: EN 196-6:2010-05	Results	Standard Requirements
Expansion	0.3	10 mm maximum
Fineness by Blaine cm ^{2}/g	3658	cm ^{2}/g

All the Above chemical, mechanical and physical analysis comply with the above mentioned standard requirements

Calculation method

$C_3S = 4.07(Cao - F.l) - 7.6\ SiO2 - 6.718\ Al_2O_3 - 1.43\ Fe_2O_3 - 2.852\ SO_3$

$C_2S = 2.867\ SiO2 - 0.754\ C_3S$ $C_3A = 2.65 Al_2O_3 - 1.692\ Fe_2O_3$

$C4AF = 3.04\ Fe2O3$ $(AE = Na2O + 0.658K2O)$