

# Cement Quality Certificate

Cement Type:	Portland Cement EN 197-1 – CEM I
Strength Class:	42,5 N
COMPLIES WITH:	BS EN197-1:2011 & ES 4756-1:2013

Date of Issue : January-22

## Chemical & Standard Composition Requirements

### Chemical Composition [Test Method: BS EN 196-2:2005]

		<u>Results</u>	<u>Standard Requirements</u>
Silicon Oxide	SiO <sub>2</sub>	20.48 %	
Aluminium Oxide	Al <sub>2</sub> O <sub>3</sub>	4.84 %	
Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	4.01 %	
Calcium Oxide	CaO	65.56 %	
Magnesium Oxide	MgO	1.93 %	
Sulphate	SO <sub>3</sub>	2.54 %	3.50% Max.
Potassium Oxide	K <sub>2</sub> O	0.15 %	
Sodium Oxide	Na <sub>2</sub> O	0.18 %	
Chloride	Cl	0.04 %	0.10% Max.
Insoluble Residue	IR	0.49 %	5.00% Max.
Chromium VI	Cr <sup>+6</sup>	0.00 ppm	2 ppm Max.
Loss On Ignition	LOI	3.78 %	5.00% Max.
Free Lime	F. CaO	1.26 %	
Tricalcium Silicates	C <sub>3</sub> S	60.61 %	
Tricalcium Aluminates	C <sub>3</sub> A	6.05 %	

### Physical Properties

#### Setting Time [Test Method BS EN 196-3:2005]

	<u>Results</u>	<u>Standard Requirements</u>
Initial Time (minutes)	180	60 minutes Min.
Final Time (minutes)	240	
Standard Consistency (%)	27.10	

#### Compressive Strength [Test Method BS EN 196-1:2005]

	<u>Results</u>	<u>Standard Requirements</u>
2 days (N/mm <sup>2</sup> )	17.10	10.0 N/mm <sup>2</sup> Min.
28 days (N/mm <sup>2</sup> )	50.80	42.5 N/mm <sup>2</sup> Min.

#### Fineness [Test Method BS EN 196-6:2005]

	<u>Results</u>	<u>Standard Requirements</u>
Specific Surface (cm <sup>2</sup> /g)	3285	

#### Soundness Test Method: BS EN 196-3:2005

	<u>Results</u>	<u>Standard Requirements</u>
Expansion (mm)	0.75	10.0 mm Max.

### COMMENTS:

All the above tests comply with the above mentioned standard requirements [BS EN197-1:2011 & ES 4756-1:2013].

Calculation Method: C<sub>3</sub>S = 7.5 Al<sub>2</sub>O<sub>3</sub> - 1.692 Fe<sub>2</sub>O<sub>3</sub>, C<sub>3</sub>S = (4.07\*(CaO-F.CaO)-7.6\*SiO<sub>2</sub>-6.71\*Al<sub>2</sub>O<sub>3</sub>-1.43\*Fe<sub>2</sub>O<sub>3</sub>-2.852\*SO<sub>3</sub>)



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