

## شهادة أسمنت بورتلاندي

### PORTLAND CEMENT CERTIFICATE

Type of Cement : CEM-I 42.5 N أسمنت بورتلاندي س إم 1 42.5 ن  
 Standard : BS EN 197-1:2011  
 Week No. : 39/20  
 Sample Date : 23-29.09.2020 تاريخ العينة :  
 Date of Issue : 4-Nov-20

Parameters	Units	Results %	Specification	
<b>Chemical Test Results</b>				
Loss On Ignition	LOI	%	2.85	Max. 5.0 %
Silicon Dioxide	SiO <sub>2</sub>	%	20.14	
Aluminium Oxide	Al <sub>2</sub> O <sub>3</sub>	%	4.89	
Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	%	3.19	
Calcium Oxide	CaO	%	63.20	
Magnesium Oxide	MgO	%	1.53	Max. 5.0 %
Potassium Oxide	K <sub>2</sub> O	%	0.57	
Sodium Oxide	Na <sub>2</sub> O	%	0.20	
Equivalent Alkali (Na <sub>2</sub> O +0.658* K <sub>2</sub> O)		%	0.58	
Sulphur Trioxide	SO <sub>3</sub>	%	2.83	Max 3.5 %
Chloride	Cl <sup>-</sup>	%	0.018	Max 0.10 %
Insoluble Residue	IR	%	0.34	Max. 5.0 %
Free Lime	Free CaO	%	1.34	
<b>Cement Phases</b>				
Tri Calcium Silicate	C <sub>3</sub> S	%	53.28	
Di Calcium Silicate	C <sub>2</sub> S	%	17.63	
Tri Calcium Aluminate	C <sub>3</sub> A	%	7.57	
Tetra Calcium Alumino ferrate	C <sub>4</sub> AF	%	9.71	
<b>Physical Test Results</b>				
Fineness ( Specific Surface )	m <sup>2</sup> /kg		351	
+45 µm Residue	%		8.86	
Specific Gravity			3.15	
Initial Setting Time ( IST )	Minutes		203	Min. 60 minutes
Final Setting Time ( FST )	Minutes		234	
Soundness -Le-Chatlier	mm		0.5	Max. 10 mm
<b>Compressive Strength (N/mm<sup>2</sup>)</b>				
2 Days	N/mm <sup>2</sup>		23.1	Min 10
7 Days	N/mm <sup>2</sup>		40.0	
28 Days	N/mm <sup>2</sup>		51.1	Min. 42.5 & Max. 62.5

We hereby certify that the above described PORTLAND CEMENT - CEM I 42.5 N, at the time of consignment, meets the chemical and Physical requirements of the BS EN 197-1:2011.

  
 Quality Control Manager  
 (D. Balasubramanian)