

## 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. : 07/20  
 Sample Date : 12-18.02.2020 تاريخ العينة :  
 Date of Issue : 21-Mar-20

Parameters	Units	Results %	Specification	
<b>Chemical Test Results</b>				
Loss On Ignition	LOI	%	2.97	Max. 5.0 %
Silicon Dioxide	SiO <sub>2</sub>	%	20.16	
Aluminium Oxide	Al <sub>2</sub> O <sub>3</sub>	%	4.74	
Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	%	3.43	
Calcium Oxide	CaO	%	63.15	
Magnesium Oxide	MgO	%	1.53	Max. 5.0 %
Potassium Oxide	K <sub>2</sub> O	%	0.54	
Sodium Oxide	Na <sub>2</sub> O	%	0.21	
Equivalent Alkali (Na <sub>2</sub> O +0.658* K <sub>2</sub> O)		%	0.57	
Sulphur Trioxide	SO <sub>3</sub>	%	2.54	Max 3.5 %
Chloride	Cl <sup>-</sup>	%	0.027	Max 0.10 %
Insoluble Residue	IR	%	0.34	Max. 5.0 %
Free Lime	Free CaO	%	1.26	
<b>Cement Phases</b>				
Tri Calcium Silicate	C <sub>3</sub> S	%	54.74	
Di Calcium Silicate	C <sub>2</sub> S	%	16.58	
Tri Calcium Aluminate	C <sub>3</sub> A	%	6.76	
Tetra Calcium Alumino ferrate	C <sub>4</sub> AF	%	10.44	
<b>Physical Test Results</b>				
Fineness ( Specific Surface )	m <sup>2</sup> /kg		358	
+45 µm Residue	%		9.42	
Specific Gravity			3.15	
Initial Setting Time ( IST )	Minutes		198	Min. 60 minutes
Final Setting Time ( FST )	Minutes		228	
Soundness -Le-Chatlier	mm		0.4	Max. 10 mm
<b>Compressive Strength (N/mm<sup>2</sup>)</b>				
2 Days	N/mm <sup>2</sup>		21.6	Min 10
7 Days	N/mm <sup>2</sup>		37.1	
28 Days	N/mm <sup>2</sup>		48.0	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)

