
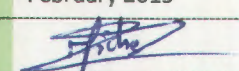


Department: Laboratory (Chemical Lab)

Portland cement P42.5 according to NL 53:99

Chemical Analysis			Physics Tests		
Tested Elements	Requirements	Results	Test	Requirements	Results
SiO ₂		19.70	Initial Set (min)	Min 60min	154
Al ₂ O ₃		4.98	Final Set (h: min)		
Fe ₂ O ₃		3.52	False Set %		
CaO		63.52	Air Content %		
MgO	Max4.00	0.88	Autoclave Expansion		
SO ₃	Max3.50	2.57	Sulfate Expansion 14 days		
L.O.I.	Max5.00	2.75	Water Expansion 14 days		
Na ₂ O		0.14	Soundness "Le Chatelier"	Max 10.00	0.56
K ₂ O		0.34	Blaine (cm ² /g)	Min2800	3174
Na ₂ O + 0.658 x K ₂ O	Max1.00	0.36	Water Demand		27.00
Free Lime		1.34	Compressive Strength (N/mm ²)	Requirements	Results
Cl ⁻	Max0.10	0.0051	1 day		
Insoluble Residue	Max4.00	0.25	2 days	Min 12.5	19.12
Additives			3 days		
C ₃ S (calculated)		63.05	7 days		36.98
C ₂ S (calculated)		8.91	28 days	42.5-62.5	56.42
C ₃ A (calculated)		7.24	Heat of Hydration (l/g)		
C ₄ AF (calculated)		10.71			
LSF (calculated)		97.47			

Remarks

Chemical Department		Physics Department			
Realized By:	Amal Nakhle	Realized By:	Michel Zakhem	Approved By:	Jean Sassine
Job Title:	Senior TCHL	Job Title:	P&C Forman	Job Title:	Laboratory Manager
Date:	February 2015	Date :	February 2015	Date:	February 2015
Signature:		Signature:		Signature:	