



CEMENTOS ALFA, S.A,

Plant: MATAPORQUERA

ER Certificate: ER-0572/1998



QUALITY ANALYSIS CERTIFICATE - CEMENT

TYPICAL RESULTS

Cement Type: CEM I 42,5 R (EN 197-1)

PERIOD: APRIL 2014

CE: 0099/CPR/A33/0154

N: 015/001358

The Quality Management System adopted in our company for the production and commercialization of cements and clinker, complies with UNE-EN-ISO 9001:2008, and it is certified by AENOR. It is also certified under IQNet network.

TESTS	Results	Specification EN 197-1
<b>Chemical Characteristics</b>		
Loss on Ignition %	2,47	≤ 5,0
SiO <sub>2</sub> %	19,95	
Al <sub>2</sub> O <sub>3</sub> %	5,52	
Fe <sub>2</sub> O <sub>3</sub> %	2,36	
CaO %	62,35	
MgO %	1,74	
Na <sub>2</sub> O %	0,22	
K <sub>2</sub> O %	1,24	
Insoluble Residue %	0,48	≤ 5,0
Sulphates (SO <sub>3</sub> ) %	3,42	≤ 4,0
Chlorides %	0,00	≤ 0,10
<b>Physical and Mechanical Characteristics</b>		
Normal Consistency Water %	30,2	
Initial Setting Time min	190	≥ 60
Final Setting Time min	235	
Soundness (Le Chatelier) mm	0,5	≤ 10
Specific Surface (Blaine) cm <sup>2</sup> /g	3800	
Compressive Strength at 2 days MPa	35,0	≥ 20,0
Compressive Strength at 28 days MPa	58,0	42,5-62,5
<b>Other Characteristics</b>		
Na <sub>2</sub> O equiv. %	1,00	
<b>Bogue Composition (mineral phases) *</b>		
C <sub>3</sub> S %	52,5	
C <sub>2</sub> S %	21,9	
C <sub>3</sub> A %	12,5	
C <sub>4</sub> AF %	7,0	

\* Corresponding to clinker composition

R-25-4-52/5-Z

Quality Manager

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GRUPO CEMENTOS PORTLAND VALDERRIVAS