



**CEMENTOS ALFA, S.A.**

**PLANT: MATAPORQUERA**

ER Certificate: ER-0572/1998



**TECHNICAL CHARACTERISTICS CERTIFICATE**

**Cement**

**CEM I 52.5 R MA**

**Period**

**November, 2014**

**CE: 0099/CPR/A33/0831**

TESTS	Results Average Value	Standard Spec. EN/UNE
<b>Chemical Characteristics</b>		
Loss on Ignition %	1,8	< 5,0
Insoluble Residue %	0,7	< 5,0
Sulphates (SO <sub>3</sub> ) %	3,3	< 4,0
Chlorides %	0,01	< 0,10
<b>Physical and Mechanical Characteristics</b>		
Normal Consistency Water %	30,0	
Initial Setting Time min	149	> 45
Final Setting Time min	193	< 720
Soundness Le Chatelier mm	0,6	< 10
Specific Surface (Blaine) cm <sup>2</sup> /g	4918	
Compressive Strength at 2 days MPa		
• Monthly average	40,7	> 30,0
• Cumulative average (12/2013 - 11/2014)	40,4	> 30,0
• Cumulative Std. Dev. (12/2013 - 11/2014)	1,9	
Compressive Strength at 28 days MPa		
• Monthly average	68,6	> 52,5
• Cumulative average (12/2013 - 11/2014)	68,5	> 52,5
• Cumulative Std. Dev. (12/2013 - 11/2014)	2,1	
<b>Additional Characteristics</b>		
Alkali Equivalent (%)	0,66	< 0,75

This document doesn't imply that any amount of cement has been supplied by the Company

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Chief of Quality Control



GRUPO  
CEMENTOS  
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VALDERRIVAS