



CEMENTOS ALFA, S.A.

PLANT: MATAPORQUERA

ER Certificate: ER-0572/1998



TECHNICAL CHARACTERISTICS CERTIFICATE

Cement

CEM I 52.5 R MA

Period

January, 2017

CE: 0099/CPR/A33/0831

| TESTS | Results Average Value | Standard Spec. EN/UNE |
|--|--------------------------|--------------------------|
| Chemical Characteristics | | |
| Loss on Ignition % | 2,2 | < 5,0 |
| Insoluble Residue % | 0,6 | < 5,0 |
| Sulphates (SO ₃) % | 3,3 | < 4,0 |
| Chlorides % | 0,00 | < 0,10 |
| Physical and Mechanical Characteristics | | |
| Normal Consistency Water % | 30,1 | |
| Initial Setting Time min | 151 | > 45 |
| Final Setting Time min | 203 | < 720 |
| Soundness Le Chatelier mm | 0,4 | < 10 |
| Specific Surface (Blaine) cm ² /g | 4937 | |
| Compressive Strength at 2 days MPa | | |
| • Monthly average | 36,8 | > 30,0 |
| • Cumulative average (02/2016 - 01/2017) | 39,9 | > 30,0 |
| • Cumulative Std. Dev. (02/2016 - 01/2017) | 2,2 | |
| Compressive Strength at 28 days MPa | | |
| • Monthly average | 62,7 | > 52,5 |
| • Cumulative average (02/2016 - 01/2017) | 65,3 | > 52,5 |
| • Cumulative Std. Dev. (02/2016 - 01/2017) | 2,6 | |
| Additional Characteristics | | |
| C3A * (%) | 5,7 | |
| Alkali Equivalent (%) | 0,67 | < 0,75 |

* Corresponding to clinker composition

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

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Chief of Quality Control

