



**GCC of America**

600 S. Cherry Street, Suite 1000, Glendale, CO 80246  
 Sales (303) 739-5900, Customer Service (800) 225-5422

**MATERIAL CERTIFICATION REPORT OIL WELL API**

**Plant:** Odessa  
**Address:** 16501 W. Murphy  
 Odessa, TX 79760  
**Contact:** Gustavo Calderon  
**Phone:** (432) 385-2836

**Cement Type:** API Class C - HSR  
**Date Issued:** 8-Nov-18  
**Production Period:** 1-Oct-18  
**To:** 31-Oct-18

**STANDARD REQUIREMENTS API (Spec 10A)**

| CHEMICAL                |                     |             |
|-------------------------|---------------------|-------------|
| Item                    | API 10A Spec. Limit | Test Result |
| MgO (%)                 | 6.0 max             | 0.8         |
| SO <sub>3</sub> (%)     | 3.0 max             | 3.4         |
| Loss On Ignition (%)    | 3.0 max             | 2.1         |
| Insoluble Residue (%)   | 0.75 max            | 0.55        |
| Equivalent Alkalies (%) | NR                  | 0.23        |

| Potential Phase Composition                |                     |             |
|--|---------------------|-------------|
| Item                                       | API 10A Spec. Limit | Test Result |
| C <sub>3</sub> S (%)                       | NR                  | 59          |
| C <sub>3</sub> A (%)                       | 3 max               | 2.0         |
| C <sub>4</sub> AF + 2 C <sub>3</sub> A (%) | 24 max              | 19          |

| PHYSICAL                             |                     |             |
|--------------------------------------|---------------------|-------------|
| Item                                 | API 10A Spec. Limit | Test Result |
| Blaine Fineness (m <sup>2</sup> /kg) | 400 min             | 435         |

| Compressive Strength           |                     |             |
|--------------------------------|---------------------|-------------|
| Item                           | API 10A Spec. Limit | Test Result |
| 8 h, 38 °C (100 °F), MPa (psi) | 2.1 (300) min       | 4.1 (600)   |
| 24h, 38 °C (100 °F), MPa (psi) | 13.8 (2000) min     | 15.2 (2200) |

| Thickening Time, Schedule 4       |                     |             |
|-----------------------------------|---------------------|-------------|
| Item                              | API 10A Spec. Limit | Test Result |
| Maximum Consistency, 15 to 30 min | 30 max              | 6           |
| Thickening Time @ 70 Bc (min)     | <sup>A</sup>        | 123         |
| Thickening Time @ 100 Bc (min)    | 90 min              | 129         |

NR: No Requirement

<sup>A</sup> Limit not specified. Test results provided for informational purposes only.

GCC of America Cement is warranted to conform at the time of shipment with current API 10A. No other warranty is made or implied. Having no control over the use of its cements, GCC of America does not guarantee finished work.