

Appendix G

Test-2 Total Organic Carbon (TOC) Concentration

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This appendix presents the total organic carbon (TOC) levels, which reflect the organic concentration in the Test-2 solution. The organic matters in the solution likely originated from the binding material of the fiberglass used in the tests. These organic materials may potentially become involved in the complexation process with metal, concrete coupons, and fiberglass during ICET tests. The measurement of TOC was performed using a TOC analyzer with a UV-persulfate oxidation method.

Potassium hydrogen phthalate with the purity of 99.95% was used to make a standard TOC solution for calibration. The TOC analyzer was calibrated using a 5-point calibration curve up to 20 ppm. During measurement of the actual test samples, a TOC standard solution of 10 mg/L was analyzed again to make sure the instrument was in good condition. The solution samples were extracted on Day 0, Day 15, and Day 30 of Test 2. The samples were prefiltered through a 0.7- μ m fiberglass filter at 60°C to remove particulate impurities. The TOC measurements were performed on April 25, 2005. Based on the results, TOC in the solution generally increased throughout the duration of the test. A substantial TOC increase was found in the Day-15 samples compared to that found in the Day-0 sample. However, only a slightly increase in TOC was observed from the Day-15 to the Day-30 sample.

Table G-1. Total Organic Carbon Results for Test 2 (mg/L)

| Test 2 | Day 0 | Day 15 | Day 30 |
|---------|--------|--------|--------|
| | 0.2496 | 7.2464 | 7.9276 |
| | 0.1332 | 7.3696 | 7.8712 |
| | 0.102 | 7.42 | 7.9096 |
| Mean | 0.1616 | 7.3453 | 7.9028 |
| Std Dev | 0.0778 | 0.0893 | 0.0288 |

Table G-2. Potassium Hydrogen Phthalate Standard TOC Solution

| Control (10 ppm standard solution) | |
|------------------------------------|---------|
| | 10.0511 |
| | 9.9825 |
| | 9.995 |
| Mean | 10.0095 |
| Std Dev | 0.0365 |