

# Certificate of Analysis

**CLP ICP Spike Standard #1**

**Catalog Number: ICM-451**

**Lot Number: CL-4287**

**Lot Issue Date: 10/27/2014**

**Expiration Date: 11/30/2017**

This Certified Reference Material (CRM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system. The analyte concentration(s) were prepared and verified by an ISO Guide 34 / ISO 17025 accredited laboratory, and compared to calibration standards independently prepared using NIST SRM(s). The certified value and uncertainty value at the 95% confidence level for each analyte is determined gravimetrically.

| Analyte    | True Value |   |      | Analytical Method | NIST SRM     |       |
|------------|------------|---|------|-------------------|--------------|-------|
| aluminum   | 2002       | ± | 10   | µg/mL             | ICP / ICP-MS | 3101a |
| barium     | 2003       | ± | 10   | µg/mL             | ICP / ICP-MS | 3104a |
| beryllium  | 50.10      | ± | 0.25 | µg/mL             | ICP / ICP-MS | 3105a |
| chromium   | 200.3      | ± | 1.0  | µg/mL             | ICP / ICP-MS | 3112a |
| cobalt     | 500.4      | ± | 2.5  | µg/mL             | ICP / ICP-MS | 3113  |
| copper     | 250.4      | ± | 1.3  | µg/mL             | ICP / ICP-MS | 3114  |
| iron       | 1001       | ± | 5    | µg/mL             | ICP / ICP-MS | 3126a |
| manganese  | 500.3      | ± | 2.5  | µg/mL             | ICP / ICP-MS | 3132  |
| nickel     | 500.4      | ± | 2.5  | µg/mL             | ICP / ICP-MS | 3136  |
| * silver   | 50.00      | ± | 0.25 | µg/mL             | ICP / ICP-MS | 3151  |
| * vanadium | 500.5      | ± | 2.5  | µg/mL             | ICP / ICP-MS | 3165  |
| zinc       | 501.0      | ± | 2.5  | µg/mL             | ICP / ICP-MS | 3168a |

**Matrix:** 5% nitric acid, with trace hydrofluoric acid in low TOC water (< 50 ppb)

\* light sensitive

ULTRA uses purified acids, 18 megaohm double deionized water, calibrated Class A glassware, and meticulously cleaned bottles in the manufacturing of ULTRAgrade standards. Balances used in the manufacturing of this standard are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001.



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