



Certificate of Analysis

ICP-MS Tuning Solution 10 ppm 100mL

Agilent Part Number: 5190-0465

Lot Number: 17-22VY

| Analyte | CAS# | Labeled Conc. | Measured Conc. | SRM | Start Mat'l Formula | Start Mat'l Purity | Analyte | CAS# | Labeled Conc. | Measured Conc. | SRM | Start Mat'l Formula | Start Mat'l Purity |
|---------|-----------|---------------|----------------|--------|---|--------------------|---------|-----------|---------------|----------------|--------|-------------------------------|--------------------|
| Ce | 7440-45-1 | 10.0 mg/L | 10.1 mg/L | 3110* | Ce(NO ₃) ₃ · 6H ₂ O | 99.99+ | Mg | 7439-95-4 | 10.0 mg/L | 10.1 mg/L | 3131a* | Mg | 99.99+ |
| Co | 7440-48-4 | 10.0 mg/L | 10.0 mg/L | 3113* | Co | 99.99+ | Tl | 7440-28-0 | 10.0 mg/L | 9.98 mg/L | 3158* | TlNO ₃ | 99.99+ |
| Li | 7439-93-2 | 10.0 mg/L | 10.0 mg/L | 3129a* | Li ₂ CO ₃ | 99.99+ | Y | 7440-65-5 | 10.0 mg/L | 9.99 mg/L | 3167a* | Y ₂ O ₃ | 99.99+ |

* - indicates NIST SRM

† - indicates CRM (when NIST SRM is not available)

Purity grades:

Starting Materials: Shown above

Matrix:

2% HNO₃: HNO₃ (CAS No. 7697-37-2) high purity grade

Traceability:

This standard has been produced gravimetrically and volumetrically using ISO 9001 quality procedures. ICP / ICP-MS Spectrometer was used to determine the concentration of the main elements via NIST SRMs shown above, as well as the impurities. Other reference standards used: 13-165VY,4-203BD,27-36JB.

Trace Metallic Impurities in the Actual Solution, in µg/L, via ICP-MS Analysis, results are accurate to ±10%:

| Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| Ag | 0.3 | Cs | <0.02 | Ho | <0.01 | Nd | <0.03 | Ru | <0.01 | Te | <0.9 |
| Al | <4 | Cu | 3 | In | <0.06 | Ni | 0.08 | Sb | <0.07 | Th | <0.01 |
| As | <0.5 | Dy | <0.01 | Ir | <0.02 | P | <100 | Sc | <0.7 | Ti | <1 |
| Au | <0.04 | Er | <0.01 | K | <2 | Pb | 0.5 | Se | <2 | Tm | <0.01 |
| B | <2 | Eu | <0.01 | La | 0.5 | Pd | 0.09 | Si | <200 | U | <0.1 |
| Ba | <0.1 | Fe | 2 | Lu | <0.01 | Pr | 0.1 | Sm | <0.04 | V | <0.01 |
| Be | <2 | Ga | <0.1 | Mn | 0.4 | Pt | <0.01 | Sn | 1 | W | <0.09 |
| Bi | <0.03 | Gd | <0.1 | Mo | <0.07 | Rb | <0.08 | Sr | <0.1 | Yb | <0.02 |
| Ca | 30 | Ge | <1 | Na | 2 | Re | <0.01 | Ta | <0.1 | Zn | 10 |
| Cd | 0.05 | Hf | <0.01 | Nb | <0.07 | Rh | <0.02 | Tb | <0.1 | Zr | <0.2 |
| Cr | 0.1 | Hg | <0.01 | | | | | | | | |

Balances are calibrated regularly with weight sets traceable to NIST.

Agilent reference standards are guaranteed stable and accurate to ±0.5% of measured analyte concentration. For these solutions we use the highest purity acids applicable, 18 megohm double deionized water and acid-leached, triple rinsed bottles. All glassware used is class A.

Date of release: January 31, 2011

Date of expiration: July 31, 2012

QC Coordinator
CertiPrep, Inc.