

Certificate of Analysis

Tuning Solution for ICP-MS 7500cs

Agilent Part Number: 5185-5959
Lot Number: 12-105GS

| 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 | 1.00 µg/L | 1.01 µg/L | 3110* | Ce(NO ₃) ₂ · 6H ₂ O | 99.99+ | Mg | 7439-95-4 | 1.00 µg/L | 1.03 µg/L | 3131a* | Mg(NO ₃) ₂ · 6H ₂ O | 99.99+ |
| Co | 7440-48-4 | 1.00 µg/L | 1.02 µg/L | 3113* | Co | 99.99+ | Tl | 7440-28-0 | 1.00 µg/L | 1.01 µg/L | 3158* | TlNO ₃ | 99.99+ |
| Li | 7439-93-2 | 1.00 µg/L | 1.01 µg/L | 3129a* | Li ₂ CO ₃ | 99.99+ | Y | 7440-65-5 | 1.00 µg/L | 0.993 µg/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:

 2wt% 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: all 8, 12-37GS.

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 | <0.01 | Cs | <0.01 | Ho | <0.01 | Nd | <0.01 | Ru | <0.01 | Te | <0.01 |
| Al | <0.05 | Cu | <0.01 | In | <0.01 | Ni | <0.01 | Sb | <0.01 | Th | <0.01 |
| As | <0.01 | Dy | <0.01 | Ir | <0.01 | P | <10 | Sc | <0.01 | Tl | <0.01 |
| Au | <0.01 | Er | <0.01 | K | <0.1 | Pb | <0.01 | Se | <0.01 | Tm | <0.01 |
| B | <0.04 | Eu | <0.01 | La | <0.01 | Pd | <0.01 | Si | <5 | U | <0.01 |
| Ba | <0.01 | Fe | <0.1 | Lu | <0.01 | Pr | <0.01 | Sm | <0.01 | V | <0.01 |
| Be | <0.01 | Ga | <0.01 | Mn | <0.01 | Pt | <0.01 | Sn | <0.01 | W | <0.01 |
| Bi | <0.01 | Gd | <0.01 | Mo | <0.01 | Rb | <0.01 | Sr | <0.01 | Yb | <0.01 |
| Ca | <0.1 | Ge | <0.01 | Na | <0.03 | Re | <0.01 | Ta | <0.01 | Zn | <0.03 |
| Cd | <0.01 | Hf | <0.01 | Nb | <0.01 | Rh | <0.01 | Tb | <0.01 | Zr | <0.01 |
| Cr | <0.01 | Hg | <0.01 | | | | | | | | |

Balances are calibrated regularly with weight sets traceable to NIST.

Agilent reference standards are guaranteed stable and accurate to ±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: September 30, 2011

Date of expiration: March 31, 2012

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