

Certificate of Analysis

Tuning Solution for ICP-MS

Agilent Part Number: 5185-5959
Lot Number: 24-192GSX2

| 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 |
|---------|-----------|---------------|----------------|--------|--|--------------------|---------|-----------|---------------|----------------|--------|-------------------------------|--------------------|
| Ca | 7440-45-1 | 1.00 µg/L | 1.02 µg/L | 3110* | Ca ₂ (CO ₃) _x (H ₂ O) | 99.99+ | Mg | 7439-95-4 | 1.00 µg/L | 1.03 µg/L | 3131a* | Mg | 99.99+ |
| Co | 7440-48-4 | 1.00 µg/L | 0.987 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 | 0.989 µg/L | 3129a* | Li ₂ CO ₃ | 99.99+ | Y | 7440-85-5 | 1.00 µg/L | 1.01 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. Agilent 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; 24-182GS; 24-121GS.

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


| Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| Ag | <0.05 | Ca | <0.05 | Ho | <0.05 | Nd | <0.05 | Ru | <0.05 | Te | <0.05 |
| Al | <0.3 | Cu | <0.05 | In | <0.05 | Ni | <0.05 | Sb | <0.05 | Th | <0.05 |
| As | <0.05 | Dy | <0.05 | Ir | <0.05 | P | <50 | Sc | <0.05 | Tl | <0.05 |
| Au | <0.05 | Er | <0.05 | K | <1 | Pb | <0.05 | Se | <0.1 | Tm | <0.05 |
| B | <0.5 | Eu | <0.05 | La | <0.05 | Pd | <0.05 | Si | <50 | U | <0.05 |
| Ba | <0.05 | Fe | <0.3 | Lu | <0.05 | Pr | <0.05 | Sm | <0.05 | V | <0.05 |
| Ba | <0.05 | Ga | <0.05 | Mn | <0.05 | Pt | <0.05 | Sn | <0.05 | W | <0.05 |
| Bi | <0.05 | Gd | <0.05 | Mo | <0.05 | Rb | <0.05 | Sr | <0.05 | Yb | <0.05 |
| Ce | <1 | Ge | <0.05 | Na | <1 | Ra | <0.05 | Ta | <0.05 | Zn | <0.3 |
| Cd | <0.05 | Hf | <0.05 | Nb | <0.05 | Rh | <0.05 | Tb | <0.05 | Zr | <0.05 |
| Cr | <0.05 | Hg | <0.05 | | | | | | | | |

Balances are calibrated regularly with weight sets traceable to NIST.

Agilent reference standards are guaranteed stable and accurate to ±10% of measured analyte concentration. This uncertainty is at 95% confidence interval, a coverage factor of 2. 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. This standard was manufactured following the guidelines set forth under ISO 17025 and ISO Guide 34 regulations.

Date of release: July 31, 2017

Date of expiration: July 31, 2018


 QC Coordinator