Agilent Technologies

# Certificate of Analysis

## ICP-MS Tuning Solution 10 ppm 100mL

**Agilent Part Number:** 5190-0465 **Lot Number:** 4-127MKBY2

| 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 µg/mL | 9.98 µg/mL | 3110* | $Ce_2(CO_3)_3.x(H_2O)$ | 99.99+ | Mg | 7439-95-4 | 10.0 µg/mL | 9.99 µg/mL | 3131a* | Mg | 99.99+ |
| Co | 7440-48-4 | 10.0 µg/mL | 9.92 µg/mL | 3113* | Co | 99.99+ | Tl | 7440-28-0 | 10.0 µg/mL | 9.88 µg/mL | 3158* | $TlNO_3$ | 99.99+ |
| Li | 7439-93-2 | 10.0 µg/mL | 9.96 µg/mL | 3129a* | $Li_2CO_3$ | 99.99+ | Y | 7440-65-5 | 10.0 µg/mL | 9.95 µg/mL | 3167a* | $Y_2O_3$ | 99.99+ |

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

**Purity grades:**

Starting Materials: Shown above

Matrix:

2% $HNO_3$: $HNO_3$ (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: 23-98VY, 23-115VY.

**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 | <1 | Ce | <0.08 | Ho | <0.01 | Nd | <0.02 | Ru | <0.05 | Te | <0.3 |
| Al | 1 | Cu | <0.2 | In | <0.06 | Ni | 0.3 | Sb | <0.05 | Th | <0.01 |
| As | <0.2 | Dy | <0.02 | Ir | <0.04 | P | <100 | Sc | <0.3 | Ti | <0.01 |
| Au | <0.4 | Er | <0.03 | K | <10 | Pb | <0.01 | Se | <2 | Tm | <0.01 |
| B | <0.8 | Eu | <0.01 | La | 0.03 | Pd | 0.05 | Si | <100 | U | <0.01 |
| Ba | 0.07 | Fe | 2 | Lu | <0.01 | Pr | 0.2 | Sm | <0.03 | V | <0.2 |
| Be | <0.1 | Ga | 0.5 | Mn | 0.3 | Pt | <0.06 | Sn | <0.03 | W | <0.03 |
| Bi | <0.01 | Gd | 0.1 | Mo | <0.07 | Rb | <0.05 | Sr | <0.06 | Yb | <0.01 |
| Ca | 8 | Ge | <0.2 | Na | 3 | Re | <0.01 | Ta | <0.03 | Zn | 0.7 |
| Cd | <0.01 | Hf | <0.02 | Nb | <0.02 | Rh | <0.06 | Tb | 1 | Zr | <0.07 |
| Cr | <0.8 | Hg | <0.1 | | | | | | | | |

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. 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:** November 30, 2017

**Date of expiration:** May 31, 2019

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QC Coordinator

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