

# Certificate of Analysis

## Tuning Solution for ICP-MS

**Agilent Part Number: 5185-5959**
**Lot Number: 27-178GSX2**

| 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     | 0.993 µg/L     | 3110*  | Ce <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> ·x(H <sub>2</sub> O) | 99.99+             | Mg      | 7439-95-4 | 1.00 µg/L     | 0.996 µg/L     | 3131a* | Mg                            | 99.99+             |
| Co      | 7440-48-4 | 1.00 µg/L     | 0.992 µg/L     | 3113*  | Co   | 99.99+             | Tl      | 7440-28-0 | 1.00 µg/L     | 1.00 µg/L      | 3158*  | TlNO <sub>3</sub>             | 99.99+             |
| Li      | 7439-93-2 | 1.00 µg/L     | 1.00 µg/L      | 3129a* | LiCO <sub>3</sub>  | 99.99+             | Y       | 7440-65-5 | 1.00 µg/L     | 0.990 µg/L     | 3167a* | Y <sub>2</sub> O <sub>3</sub> | 99.99+             |

\* - Indicates NIST SRM

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

**Purity grades:**

Starting Materials: Shown above

Matrix:

 2wt% HNO<sub>3</sub>: HNO<sub>3</sub> (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: 27-136GS; 27-122GS.

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

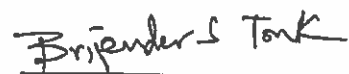
| Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. | Element | Conc. |
|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| Ag      | <0.05 | Cs      | <0.05 | Ho      | <0.05 | Nd      | <0.05 | Ru      | <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 |
| Be      | <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 |
| Ca      | <1    | Ge      | <0.05 | Na      | <1    | Re      | <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 15, 2018

Date of expiration: July 31, 2019


  
 QC Coordinator